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PIT AND QUARRY

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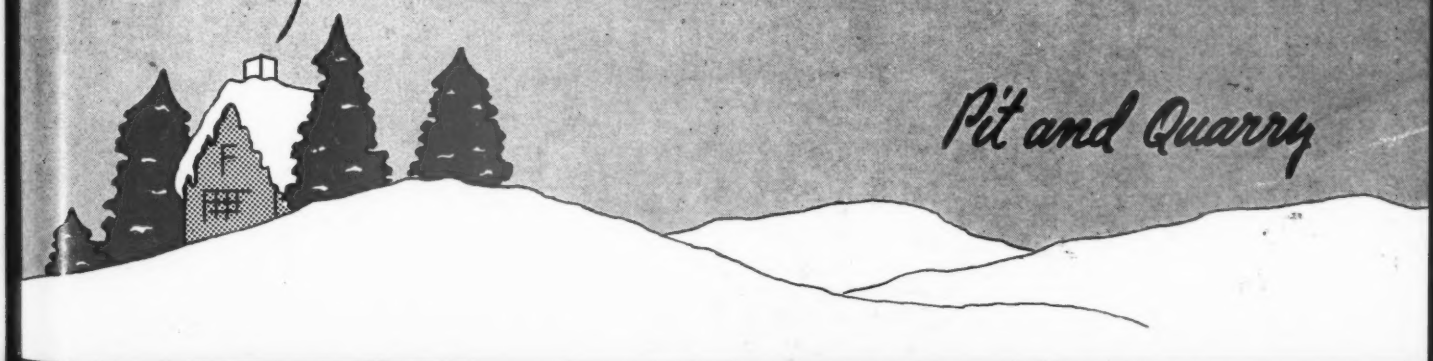
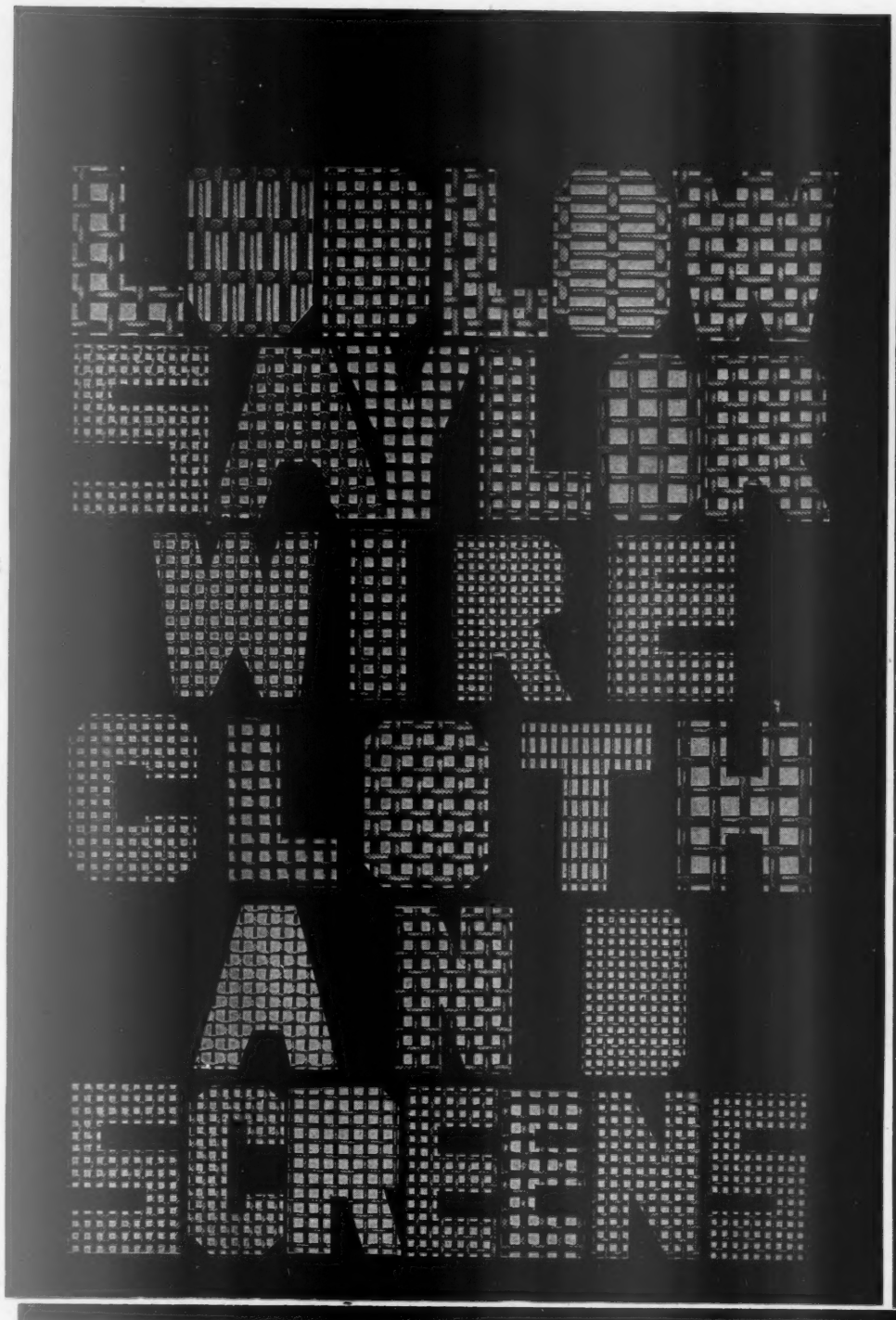
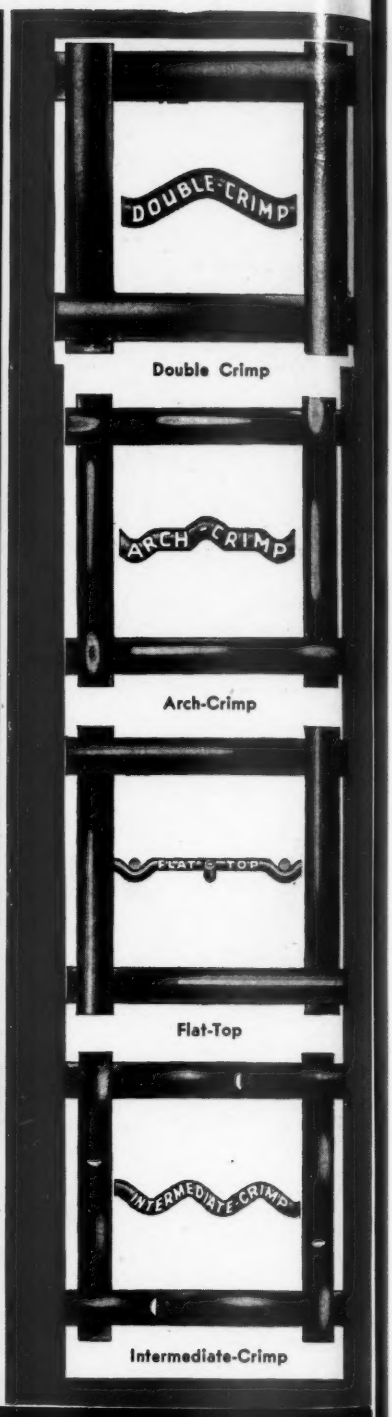
Greetings and Best Wishes for Christmas

and the New Year

Pit and Quarry







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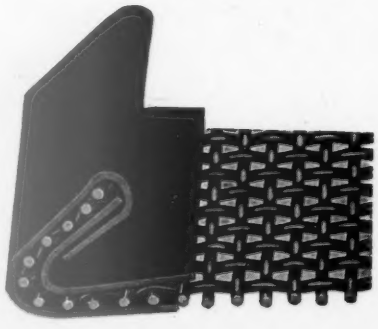

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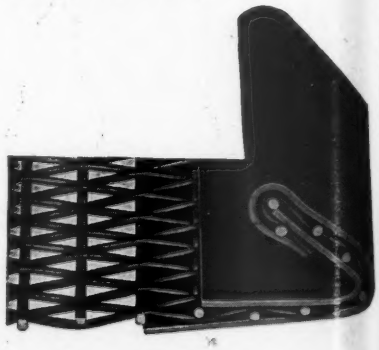
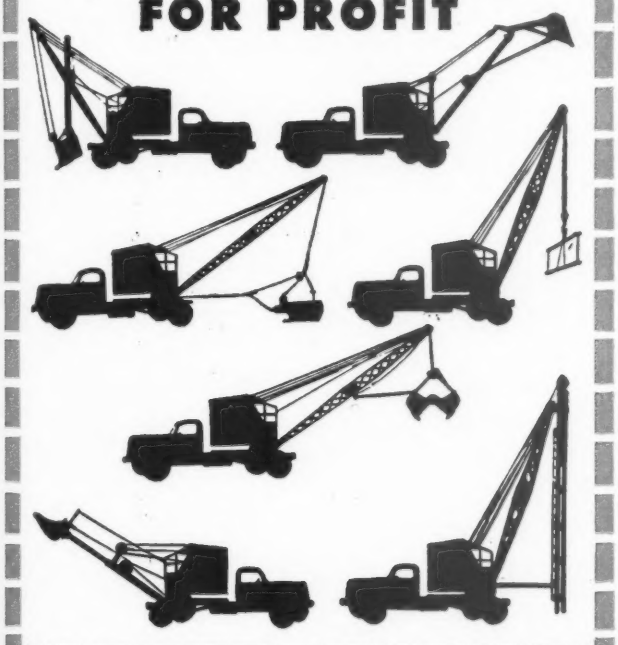


"QUICK-WAY" TRUCK SHOVELS

"QUICK-WAYS" FOR PROFIT



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PIT AND QUARRY

DECEMBER 1947

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To subscribers: Data on lower right-hand corner of envelope indicates issue with which your subscription expires. In writing to have address changed, give old as well as new address.

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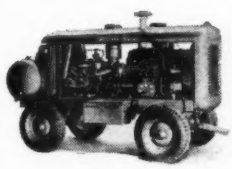

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EDITORIAL

Safety

EACH year, at about this time, various reports come into our office on the occupational accidents in the nonmetallic minerals industries during the preceding year. These reports come from the National Safety Council, the Bureau of Mines, the various associations of these industries, and the larger and more progressive individual companies. The file of these on 1946 is now almost complete and the results for that year bear out the assertion, made on this page in the September, 1946, issue of PIT AND QUARRY, that the influx of new workers into these industries from war plants, the armed forces, etc., made it necessary to increase our efforts in safety training and instruction and in the removal of hazards.

According to the preprint of the chapter on "Employment and Injuries in the Mineral Industries" from the Bureau of Mines *Minerals Yearbook, 1946* the nonmetal mines and quarries in the U.S.A. in 1946 slipped in nearly every category after making gains in all of them in 1945. A considerable increase in the number of men employed in 1946 and in the number of man-hours worked only partly accounts for an increase in fatal accidents from 69 to 74, and of nonfatal accidents from 5,266 to 6,765. Conclusive evidence that all was not well is contained in the injury rates per million man-hours. The fatality rate for nonmetal mines rose from 0.65 to 0.87, and for quarries it dropped from 0.42 to 0.31. The nonfatal rate for mines rose from 46.52 to 50.58, and for quarries from 32.41 to 33.11.

In spite of this increase these industries still have accident rates below the average for other industries with similar hazards, but this advantage is decreasing. The need for increased safety effort is evident from the fact that, while in coal mines 23 percent of the injuries happened to men with 6 months or less experience, in the cement industry 48 percent of the accidents happened to this type of worker. This is credited to the fact that the number of workers in the cement industry increased 24 percent from 1945 to 1946, while in coal mining the increase was only 5 percent. If this is true in the cement industry, which for many years has had one of the best safety records of any industry, then it must apply even more to other nonmetallic industries which have had similar increases in employment but poorer safety records.

Redoubled safety effort is called for and PIT AND QUARRY will continue to co-operate in every way through the publishing of safety information of all kinds, and through the donation of safety awards to any national, state or regional association of producers in this field which will stage a safety contest among its members and will avail itself of this offer.

Annual Review and Preview

THE January issue of PIT AND QUARRY, as has been our custom for many years, will again be our Annual Review Number, in which we will review the important developments of 1947 and attempt to forecast those for 1948, in all the nonmetallic minerals industries constituting the Pit and Quarry field. In these "reviews" we will cover important developments of a general nature affecting one or more industries, others specifically affecting certain industries, outstanding new plants, new methods, new and improved types of equipment, etc. In this issue also will be many special articles on similar subjects, selected because of their suitability for this annual issue.

Because most of the general information necessary for an accurate review of developments in any year does not become available until the last month of that year, it is obviously impossible now to estimate even roughly the output in our industries in 1947. On the strength of the evidence on hand, however, it seems quite obvious that production in most industries was above that in 1946—as we predicted in our January, 1947, issue—and that prospects for 1948 are even better. More detailed and accurate information will be found in our January issue.

About Signs

FOR many years, in traveling about the country prying into the affairs of nonmetallic minerals producers, we have wondered, sometimes profanely, why most of them make themselves so hard to find. Signs, clear and accurate ones, are what we are talking about. We are not suggesting that such signs be erected just so our field editors and circulation representatives can find you more easily—you can't hide from them! It is merely because such signs form one of the best investments a producer can make. Many operations are located far off the beaten path and are difficult to get to. Why impose a further competitive disadvantage by making them hard to find?

Our determination to brave the wrath of our readers by thus criticizing the manner in which many of them run their businesses was brought to a head by an item in the November, 1947, *News Letter* of the Missouri Limestone Producers Assn., a lively publication of an alert and progressive organization. Among the hundreds of magazines, house organs, etc., which come over our desk this is one which we seldom fail to look over carefully. This one-page sheet is always packed with pertinent information affecting particularly the producers of agricultural limestone. In it also one occasionally finds little gems of advice of interest to all producers. In the November 1, 1947, issue appeared the item quoted below under the heading "Where Are the Quarry Signs?"

"Some Missouri limestone producers have erected adequate signs to tell the public where their quarry is located. Other producers have inadequate signs, or no signs at all and a stranger to their locality has to make inquiry. Sometimes, the local people do not know the location of the quarry.

"A good sign at the turn-off from the nearest highway, with adequate direction information would certainly help the stranger to find his way and would be a reminder to the local people that there is a limestone quarry in the neighborhood.

"The sign should not carry too much information. The name of the producer should be painted in bold letters. Show the number of miles and direction by an arrow. Some producers need more than one sign if there are several cross roads between the quarry and the main highway.

"Producers should make it easy for people to find their quarries. The cost is very limited compared with the resultant value in advertising and good will."

Walter E. Trasser

PIT AND QUARRY

CHICAGO DECEMBER, 1947

Cost Reduction in Handling Main Discussion Theme at Materials Handling Show

The major theme of discussion at the Conference on Materials Handling to be held in Cleveland, January 12 through 16 will be cost reduction through improved handling. Among the topics to be considered are the following: handling unusual shapes; vertical, horizontal and inter-floor handling; reckoning with floor loads and elevator capacities; handling bulk products; when manual operations pay; safety principles in handling; standardization in materials-handling equipment; and integrating different types of equipment.

Approximately 180 exhibitors will show equipment for handling various types of materials. A Materials Handling Theatre will exhibit films on appropriate subjects. The conference, to be held in connection with the National Materials Handling Exposition, will convene at Cleveland's Public Auditorium.

Michigan Roads Survey Slated For Completion Early in 1948

A highway survey which has been described as the most comprehensive ever undertaken in this country is nearing completion in Michigan under the sponsorship of the Michigan Good Roads Federation. This group is composed of members of the state legislature and organizations representing motorists, truckers, county and city governments, private industries, farmers and road builders.

The survey, which is expected to cost about $50,000 in direct outlay and approximately the same amount indirectly, is expected to be completed early next year. The project is under the direction of J. P. Buckley, a civil engineer who took part in a similar survey in California.

Buffington Heads Committee On Safety in Nonmetals Field

The following were recently elected to the executive committee of the Cement and Quarry section of the National Safety Council: F. J. Buffington, New York Trap Rock, general chairman; J. R. Boyd, National Crushed Stone Assn., vice-chairman; and Roma M. Turpen, National Lime Assn., secretary. G. G. Grieve will continue to assist the executive committee as staff representative of the National Safety Council.

Coming Events

January 12-16, 1948—Cleveland. Second National Materials Handling conference and exposition, Public Auditorium.

January 14-15 1948 — Washington. Annual meeting, National Agricultural Limestone Association, Inc., Hotel Statler.

January 20-23, 1948—Cincinnati. 32nd annual convention and exhibit, National Sand and Gravel Association, Netherland Plaza Hotel.

January 21-23, 1948—Cincinnati. 18th annual convention and exhibit, National Ready Mixed Concrete Association, Netherland Plaza Hotel.

January 26-28, 1948—Cincinnati. 31st annual convention and exhibit, National Crushed Stone Association, Netherland Plaza Hotel.

January 29-30, 1948—Cincinnati. 3rd annual convention and exhibit, Agricultural Limestone Division, National Crushed Stone Association, Netherland Plaza Hotel.

February 15-19, 1948—New York. Annual meeting, American Institute of Mining and Metallurgical Engineers, Pennsylvania Hotel.

February 15-19, 1948—Chicago. 29th annual meeting, Associated Equipment Distributors, Edgewater Beach Hotel.

February 23-26, 1948 — Denver. 44th annual convention and exhibits, American Concrete Institute, Shirley-Savoy Hotel.

February 26-28, 1948 — Roanoke, Va. Annual convention, Sand-Lime Brick Association, Roanoke Hotel.

March 1-3, 1948—New York. Annual convention, National Concrete Masonry Association, Hotel New Yorker.

March 11-13, 1948—New Orleans. 40th annual convention, American Concrete Pipe Association.

April 5-7, 1948—Hot Springs. Annual convention, National Lime Association, The Homestead.

4th Quarter Car Loadings For Cement, Sand, Gravel Expected to Show Increase

Freight car loadings of cement in the fourth quarter of the current year are expected to be 9.3 percent above those in the corresponding period last year, according to estimates compiled by the 13 Shippers Advisory Boards and made public by the Association of American Railroads.

On the basis of those estimates, freight car loadings of cement will total 171,594 in the fourth quarter of 1947, as compared with 156,943 actual car loadings of cenemt in that period last year.

Fourth quarter freight car loadings of gravel, sand and stone are expected to increase 12.0 percent, from 487,931 to 546,721. Car loadings of lime and plaster are expected to increase 8.0 percent, from 41,875 to 45,205.

$3,000,000 Cement Plant Opened by Venezuelan Firm

A cement plant costing $3,000,000 has been opened recently at Maracaibo, Venezuela, by the Venezuelan Cement Company, according to information published by the Venezuelan embassy in Washington, D. C.

Capacity of the new facilities is rated at 250 tons per day, or 160,000 sacks a month. Embassy officials described the plant, the first large one of any kind built in Venezuela since the recent war, as the most modern in the Carribean area. More than 1,700 tons of machinery and equipment went into the plant.

Ash Grove Lime & Cement Co. Wins Brand Names Citation

Ash Grove cement, manufactured by the Ash Grove Lime & Portland Cement Company of Kansas City since 1881, was among the 60 brand names which received a Certificate of Public Service from the Brand Names Foundation for 50 or more consecutive years of service to the American consumer. The award was made at a dinner held in St. Louis on September 29.

The certificate was presented to Allan B. Sunderland, president of the Ash Grove Lime & Portland Cement Company, by Henry E. Abt, president of the Brand Names Foundation, before more than 400 business and industrial executives of the Midwestern area.

General Portland Cement Opens Trading in Stock As Sales and Profits Rise

Trading on the common stock of the General Portland Cement Company began on October 17 on the New York Stock Exchange, following approval by the Exchange and the Securities and Exchange Commission of the company's application for listing, it was announced by Smith W. Storey, company president.

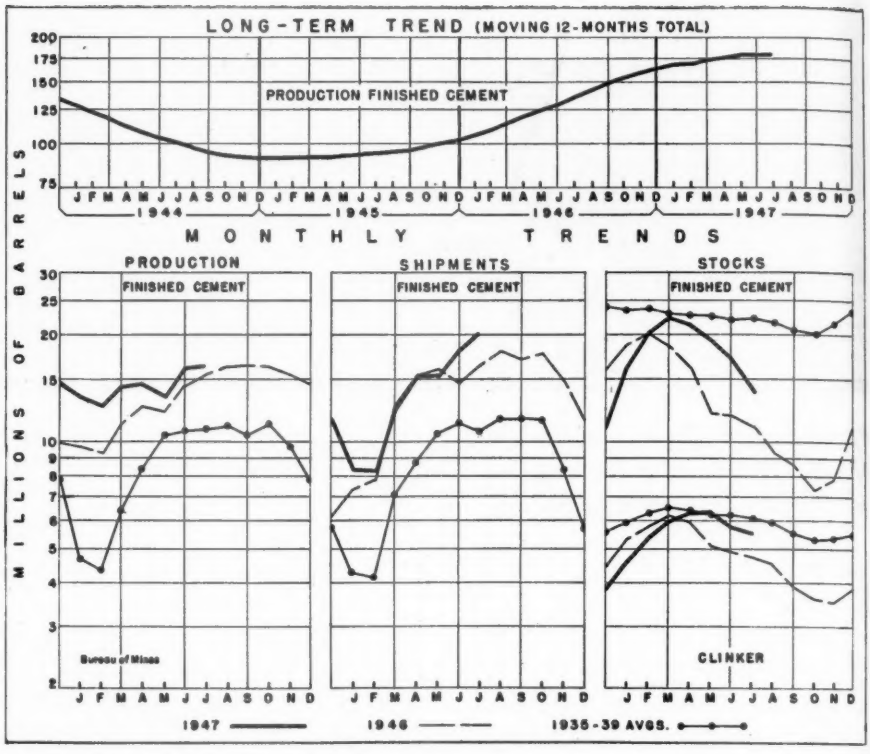
The company has 1,750,000 shares of $1 par value common stock authorized, of which 1,001,514 shares were outstanding on September 30, 1947. Through the exercise of warrants outstanding since the consolidation last February of three cement companies to form the present company, additional shares of common stock may be issued from time to time. The company has no funded debt.

Combined net sales of the three predecessor companies in the year ending December 31, 1946, totaled $12,042,421, as compared with sales of $7,565,245 in the preceding year. Combined net earnings for 1946 totaled $1,956,924, equal to $1.95 a share on the basis of 999,998 shares of common stock outstanding on June 30, 1947, as compared with earnings of $522,441 or 52 cents a share in 1945.

Unaudited figures for the six months ending June 30, 1947, showed net sales of $6,447,488 and net profit of $1,058,496, equal to $1.05 a share on 999,998 shares.

General Portland Cement Company is one of the largest producers of cement in the South and, on the basis of 1946 dollar sales of its predecessors, ranks sixth or seventh largest in the nation. With executive offices in Chicago, the company has three component divisions operating five manufacturing plants, the Florida Division at Tampa, the Signal Mountain Division at Chattanooga, Tenn., and the Trinity Division at Fort Worth, Houston and Dallas, Tex.

The company's estimated current productive capacity of regular portland cement is 6,635,000 barrels, which is expected to rise to 7,885,000 barrels with the completion of a $3,500,000 expansion program now in progress.



Production of 16,342,000 barrels of portland cement in July, 1947, reported to the U. S. Bureau of Mines, was 6 percent greater than that reported for July, 1946. Mill shipments, in July, 1947, reached 20,099,000 barrels, a figure 24 percent above that reported in July, 1946. Stocks of finished portland cement on July 31 were 13,338,000 barrels, an increase of 21 percent over that reported for July, 1946. Clinker production of 16,177,000 barrels was 5 percent greater than that reported in July 1946. The industry operated at 80 percent of capacity in July, 1947, as compared with 75 percent a year earlier.

Demand for cement, as indicated by mill shipments, was higher than in July, 1946, in all but two districts.

The long-term trend in production of finished portland cement is indicated in the accompanying chart. Monthly production, shipments, and stock trends, as compared with the 1935-39 average, are also indicated graphically.

N.L.A. Operating Division Meets In Cincinnati, January 29-30

The Operating Division of the National Lime Association will hold its next meeting on January 29 and 30, 1948, in Cincinnati at the Gibson Hotel.

The time and place of this meeting have been selected to enable National Lime Association member company representatives to see the big exhibit of the Manufacturers' Division of the National Crushed Stone Association, which is holding its annual convention that week at the Netherland Plaza Hotel.

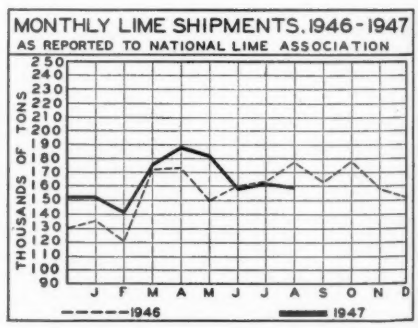
An interesting, diversified program is being prepared for the N.L.A. operating meeting under the direction of Bolton L. Corson (G. & W. H. Corson, Inc., Plymouth Meeting, Pa.), chairman of the Operating Division, and H. M. Beatty (The Kelley Island Lime and Transport Company, Cleveland, O.), chairman of the program committee. In view of the enthusiasm and number of lime operators at previous operating meetings, a large attendance is anticipated. Over 100 lime production men were present at the operating meeting last year at Hershey, Pa.

In line with present association policy, only representatives of member companies of the National Lime Association and those participating in the program are eligible to attend. Although space has been assured us at the Gibson Hotel, accommodations are still at a premium, and lime operators planning to be present in January are urged to make their reservations early, indicating time of arrival if possible.

Valley Quarries Corporation Purchased by New Company

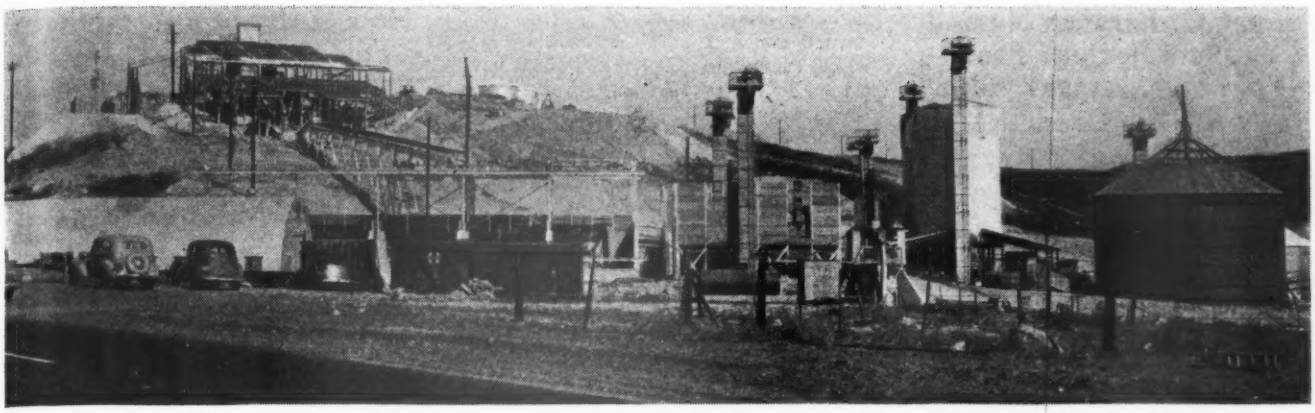
A corporation composed of Sumner Gibson, Clarence J. Egan, J. J. Buck and Carrie Winter has purchased the Valley Quarries Corporation's facilities near Taylorville, Ill.

During the last year a considerable amount of new machinery was installed by Lawrence Halbleib for the former owners. Under the new management the plant will continue to turn out limestone, road rock and road chip. Mr. Gibson will be general operations superintendent, and Mr. Egan will manage and supervise all sales and business operations. Miss Winter, an attorney, will manage all legal operations and contracts.



According to data collected by the National Lime Association, 43 companies in August, 1947, shipped 159,316 tons of lime (96,767 quicklime; 62,549 hydrate). Reporting companies represent 46.5 percent of the association members' total capacity of record. Based on Pit and Quarry's estimates for the remainder of the industry, the total shipments for the month by all plants were approximately 377,000 tons. Shipments of lime by users for August, 1947, were:

	Quicklime (tons)	Hydrate (tons)
Agricultural	1,491	9,713
Building	12,146	30,347
Chemical	83,130	22,489
Total	96,767	62,549



• The new silica-sand plant being built at Corona, Calif., by the Owens-Illinois Glass Company.

Owens-Illinois Glass Co. Erecting $1,000,000 Plant At New California Site

More than $1,000,000 is being spent by the Owens-Illinois Glass Co. on its new silica-sand plant south of Corona, Calif., which is scheduled to go into operation on or before January 1, 1948.

The new plant, located on the property worked by the late P. J. Weisel for many years, will have an estimated capacity of about 600 tons of finished product per 2-shift day. Structures, being erected under private contract, are of steel and concrete construction. A considerable amount of crushing, grinding, concentrating, washing and drying equipment is now being installed.

Open-pit mining will be carried on at a site across Highway 71, the raw sand being delivered for processing by a conveyor crossing above the highway.

1946 Crushed Stone Output Increases in Volume and Value

The output of crushed and broken stone in the United States in 1946, as reported by producers to the U. S. Bureau of Mines, totaled 177,477,780 short tons, valued at $201,367,266, an increase of 16 percent in quantity and 25 percent in value, as compared with 1945. Included in this total is stone sold or used for concrete aggregates, railroad ballast, metallurgical use (flux), agricultural limestone, refractory stone, riprap, stone sand, alkali works, calcium carbide works, sugar and glass factories, paper mills, and in various other chemical and manufacturing processes. Stone used in the manufacture of lime and cement, asphaltic stone, and slate used for granules and flour are not included in this total.

Crushed and broken stone used for concrete aggregates and railroad ballast (60 percent of the total output in 1946) increased 26 percent in quantity and 38 percent in value, as compared with 1945. Ninety-three percent of the 90,358,900 short tons used for concrete aggregates was produced by commercial operators and 7 percent by government agencies.

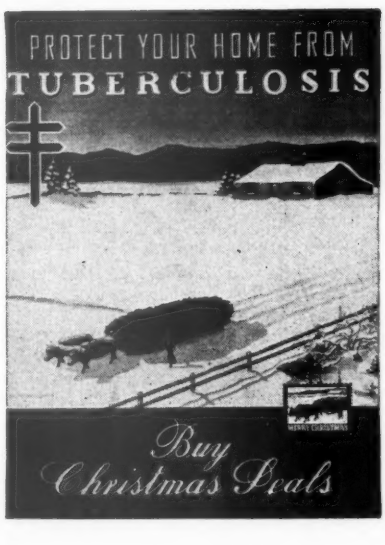
Metallurgical uses, which took 14 percent of the total crushed and broken stone in 1946, showed a decrease of 9 percent in quantity and 6 percent in value. Limestone for agricultural purposes (13 percent of the total tonnage of crushed stone in 1946) increased 31 percent in quantity and 25 percent in value, as compared with 1945. Other uses took 13 percent of the total, or 22,271,020 short tons, valued at $37,200,022.

In 1946, limestone (including dolomite) constituted 76 percent of all crushed and broken stone sold (excluding that used for making cement and lime), and was quarried in all but four states.

American Rock Wool to Build New Plant at Birmingham

The American Rock Wool Company of Wabash, Ind., has awarded a contract to The Rust Engineering Company, Pittsburgh, Pa., and Birmingham, Ala., for the design and construction of a plant in Birmingham. The plant site on Vanderbilt Road was purchased from the War Assets Administration and was formerly The Southern Detinning Corporation Plant. The work to be done includes removal of existing equipment, construction of storage and cupola buildings, structural changes in the existing buildings, and installation of the rock wool production equipment.

The plant will produce loose rock wool, granulated rock wool, and wool batts for insulation. At the present time two production lines will be installed with provision for a third line at a later date. Work contemplated at present will involve an expenditure of approximately $400,000. It is hoped to have the plant in operation by July of 1948.



Interior Secretary Krug Asks for Return of Old Equipment for Steel Mills

If American steel mills are to maintain the production rate required by domestic and foreign commitments, they must be supplied with larger quantities of iron and steel scrap. Secretary of the Interior, J. A. Krug said in calling upon the domestic mining industry to increase its shipments of these vitally needed materials to consuming channels. Companies shipping scrap at this time will enjoy the highest price in history, he said.

Since the domestic mining industry, during the past several years, has concentrated largely upon war production, it is believed that large tonnages of scrap have been accumulated in and around mines and quarries which have not been returned to the consuming market. Included in this source are some of the largest and heaviest pieces of equipment used in industry—power shovels, hoists, locomotives, rails, mine cars and tools of various types. Prompt return of scrap materials, therefore, will provide the steel industry with an estimated 200,000 tons of materials—a major contribution towards easing the expected shortage of ferrous scrap during the coming winter.

Letters emphasizing the need for complete cooperation of every segment of the mining industry in the coming scrap drive have been sent to 40 officers of mining associations throughout the country by Secretary Krug. Among the mining operations included in this group are gold, silver, iron, copper, zinc, lead and other metal mines, anthracite and bituminous coal mines, and such nonmetallic operations as gypsum, limestone, aluminum, magnesium, sulphur, potash, salt and fluorspar mines.

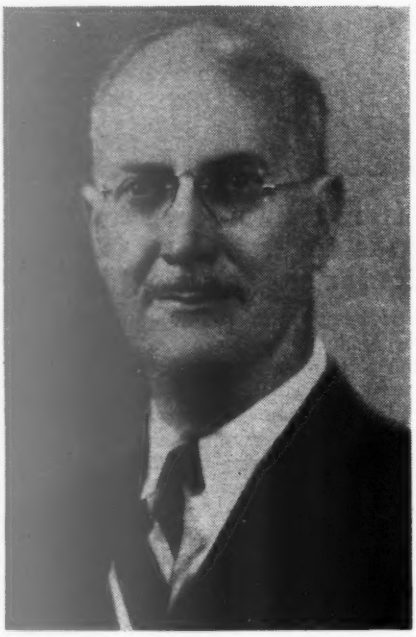
Comprehensive Report Issued On State Gas and Diesel Taxes

State Gasoline and Diesel Fuel Taxes (Bulletin SP-9), an interpretation and compilation by Charles G. Spice, has been issued by the Internal Combustion Engine Institute of Chicago. It is described as the only complete, comprehensive and authenticated table of state fuel taxes ever published.

Because of the widely varying fuel tax laws throughout the United States, numerous explanatory notes are affixed to the tables. Included in the report are the names of state officials approving the original chart figures and notes.

Hubert C. Persons Named To Public Relations Post In Portland Cement Assn.

Organization of a Public Relations Bureau for the Portland Cement Association has just been announced by Frank T. Sheets, association president. Hubert



Hubert C. Persons

C. Persons, a veteran newspaper and advertising man, has been appointed manager of the new bureau. Mr. Persons has been on the staff of the association's Advertising and Publications Bureau since 1934. For the past six years he has been assistant advertising manager.

Milton E. Hlava, a Chicago public relations and advertising man, has been named assistant advertising manager.

S. Dakota Cement Commission Reports 400-Car Shortage

The South Dakota state cement commission, which has charge of operation of the state-owned cement plant at Rapid City, has been stalemated by its inability to provide cement for needed housing in the state. Out-of-state cement firms, it is claimed, have been slow to neglect their regular customers to help out housing in a state which ordinarily depends upon its state-owned cement industry; and consequently the cement commission met recently at Rapid City to grapple with the statewide shortage of approximately 400 carloads in unfilled orders for large and small projects in South Dakota.

Lack of cement has held up much needed housing construction, and the full impact was felt just as a newly established agency for prefabricated houses in the capital city, Pierre, began to receive units for dwellings that could be erected speedily if concrete or cement block foundations were provided. A minimum of seven carloads is needed immediately to speed building where ground already has been broken in Pierre.

The state cement block plant was closed late in September after selling its remaining cement stock to projects that needed concrete to go forward. Meanwhile, communities in South Dakota have turned to the prefabs with their cement foundations as the sole hope for those who have postponed conventional home building because of soaring costs and scarcities. The 400-carload lag behind orders at the Rapid City plant represents nearly 70 days' full production.

Charles Boettcher Fellowship Awarded to W. C. Sivers

The Charles Boettcher Fellowship in Concrete Research, established by President Charles Boettcher, president of the Ideal Cement Company, at the University of Colorado, has been awarded to W. C. Sivers.

Although the fellowship was established immediately after V-J Day, the requirements were so rigid and the field so specialized that no applicants were accepted until now.

Hon. Antonio Ruiz Galindo Dedicates Mexican Plant Of International Harvester

A distinguished guest at the dedication of the Saltillo Works of the International Harvester of Mexico, S. A. at Saltillo, Coahuila, Mexico, on July 6 was the Honorable Antonio Ruiz Galindo, Minister of National Economy. The new International facilities were dedicated by Sr. Galindo "to the farmers of Mexico." This noted statesman and industrialist is the owner of the new Cal-Hidratada Veracruzana, S. A., lime plant near Orizaba, Veracruz, Mexico. (See PIT AND QUARRY, August, 1947, p. 86.)

A plant was gutted by fire recently at Wharton, N. J., but its product, rock wool, did not burn. The spectacular and unscheduled test of the material's fireproof qualities occurred at the Wharton Rockwool Company's plant several weeks ago.

Ambassadors on Wheels!

DRAVO

OUR DRIVERS are Dravo's delegates-at-large. They are our good-will ambassadors on wheels! They represent us to the community more than anyone else in our company.

Dravo's drivers circulate all over town. They are seen every day. Your identity as a driver is tied up with your company. You and your truck ARE Dravo--as far as the public is concerned.

We know of a mid-west concern that operates a fleet of delivery trucks. They work in every part of their town. Their drivers are known as "cowboys." They force their way through traffic--pay no attention to the rights of others. They are the dread of other drivers and the terror of pedestrians. The company they work for has been blacklisted in the public mind. People avoid doing business with them. No one wants a delivery by a Juggernaut.

When your truck drives out of the yard you carry the good name DRAVO with you. You become our good-will ambassador on wheels. Dravo has placed a trust in you. We think you have justified that trust and will continue to do so.

Your special courtesy to our customers has been called to our attention--often. We love to hear of these incidents--it makes us feel proud of you men on the front line.

• Dravo Corporation, Keystone Division, of Pittsburgh, Pa., recently sent the "reminder" reproduced above to all its drivers to implement the firm's policy of stressing driver courtesy.

Bureau of Reclamation Urges Bidders to Inspect Site of Hungry Horse Dam

In a release issued by the Bureau of Reclamation, U. S. Department of the Interior, prospective bidders for construction of the Hungry Horse Dam and power plant, Hungry Horse Project, Mont., were urged to examine the site before heavy snows make this impossible. The site is on the south fork of the Flathead River, nine miles southeast of Columbia Falls, Mont.

The dam will be a concrete arch structure with a maximum height of approximately 520 feet above the foundation and a crest length of approximately 2,000 feet. Among the items of work and the quantities involved are 700,000 cubic yards of stripping for aggregate deposits, 2,760,000 cubic yards of concrete (for the dam alone) and a similar amount of aggregates for the concrete.

Restoration of Old Mica Mine Under Way at South Pass City

Mica Mountain Mines, Inc., of Salt Lake City, Utah, has been engaged in the reopening and renovation of the Carissa Mine in the historical South Pass City district of Wyoming for the last year.

A crew of 25 men restored the camp buildings, consisting of bunk and boarding houses, office and staff quarters, and installed a water supply system. The mine was dewatered and repaired to the third level after the installation of the new hoist and compressor plant. Ore produced last summer was subsequently mined from that level.

A modern cyanide plant capable of treating from 75 to 100 tons per day has been installed and operated since May. Costs have been favorable and recoveries up to 90 percent have been made, despite the fact that the ore has always been considered refractory. A multiple-unit diesel-electric generating plant with a total capacity of 350 hp. provides ample power for the completely motorized plant.

A new operating shaft is to be sunk to the fifth level this winter, and the fourth and fifth levels will be repaired. Ray E. Tower of Butte, Mont., is superintendent in charge of operations.

A.I.M.E. Industrial Minerals Division meets in Atlanta

The first meeting of the Industrial Minerals Division, A.I.M.E., was held in Atlanta, Georgia, on October 8.

Captain Peyton, state geologist of Georgia, introduced the proceedings with a discussion of the industrial mineral resources of that State. Georgia produces commercially about 35 nonmetallic minerals having an annual sales value of $20,000,000.

Mr. Maynard, in a short talk, prognosticated a bright future for the lightweight aggregates industry in the Southeast. This area abounds with bentonite clays and fuller's earth, both of which are excellent raw materials for the making of lightweight aggregates.

Modern trends in crushed stone production methods were discussed by Nelson Severinghaus, superintendent of the Consolidated Quarries Corp. Topics in his discussion included hydraulic methods of stripping; the use of a 7000-lb. drop ball for secondary reduction; and the use of a delayed-action blasting switch.

The next paper, presented by T. G. Murdock, assistant state geologist of North Carolina, took the audience far afield to consider the nonmetallic mineral resources in Ethiopia. Other discussions included talks by J. R. Thoenen, chief of the Tuscaloosa division, Bureau of Mines; J. D. Felton, of C. & J. Camp & J. Buttgenbach & Co.; and J. A. Kelley, of the Universal Zonolite Corp.

For the next three days small groups made field trips to producing plants nearby. Plants visited included the Consolidated Quarries Corp. at Lithonia, Ga.; the Alabama Marble Co. at Gantts Quarry, Ala.; and the limestone mine of the Tennessee Coal, Iron & Railroad Co. near Bessemer.

• Hauling crushed stone for the Crystal Lake Crushed Stone Co., Sheboygan, Wis., is done by an International KB 10 truck-trailer, equipped with Goodyear Hi-Miler tires. Ten units are in continuous service on this project, hauling 12 cubic yards per load. The length of the haul is 40 miles, round trip.

W. M. Kinney Retires from Portland Cement Assn. After 29 Years of Service

Joseph S. Young, chairman of the board of directors of the Portland Cement Association, Chicago, has announced that William M. Kinney, vice-president for promotion, recently requested permission to retire under the terms of the association's retirement plan. This request was granted, and Mr. Kinney retired on October 1.

William M. Kinney

Mr. Kinney was connected with the portland cement industry since 1907, when he joined the staff of the Universal Portland Cement Company. In 1914 he was appointed inspecting engineer of that company. In 1918 he was elected general manager and secretary of the Portland Cement Association, a position he held until 1931, when he was also elected vice-president of the association.

Lime Fights Lime in Miami To Produce Softened Water

At the fall meeting of the American Society of Civil Engineers held recently in Miami, Fla., C. F. Wertz, resident engineer, department of water and sewers, told how the city engineers had successfully produced softened water by combating one kind of lime, calcium bicarbonate, with another, quicklime. Not only has the prime objective of acceptable city water been achieved, but by means of a new recovery process, enough lime has been salvaged to obviate the purchase of such material. There was even a surplus to sell.

Mr. Wertz described the lime recovery plant now under construction for the city of Miami as adequate to care for the needs of the community for the next 15 or 20 years and also to produce a surplus during the first 10 years which can be sold for profit.

Giant Portland Cement Bid Wins Ancor Alumina Plant For Additional Cement Mill

The Giant Portland Cement Company has announced that a contract of sale has been signed with the War Assets Administration for the purchase of the former Ancor alumina plant at Harleyville, S. C., which was declared surplus property last spring for disposal to the highest bidder.

On July 17, 1947, the Giant Company submitted the highest bid. Final award was consummated at Washington, D. C., headquarters of WAA, and the properties will be taken over at once by the purchaser.

The plant will be converted to a cement mill having an annual capacity of about 800,000 barrels. Production is expected to start in about eleven months and will supply much needed relief for the shortage of cement in that area. Reconversion will be under the supervision of D. E. Koch, vice-president in charge of production, who will make his headquarters at the new plant during construction.

P. C. A. Technical Course Gets Under Way at Chicago

The gap between laboratory findings and field applications is being bridged in the Portland Cement Association's new Technical Personnel Training Course. Designed for the thorough and systematic training of new men for the Association's general office and field work and service engineers of member companies, the course actually is set up to aid the contractor, the farmer, the architect—anyone in the construction world who uses concrete. Consisting of two 13-week periods the course, directed by John A. Ruhling, includes classroom discussion, lectures by specialists in assigned subjects, laboratory work, field trips and an extensive reading program. Periodic examinations check on the progress of each of the men attending.

Because concrete is one of the most versatile structural materials many diverse questions come up on construction projects. Typical are the following: What is air-entraining cement? What is the background of the water-cement ratio theory? What are the best methods of grading aggregates? This course is designed to provide men who know the answers, the background and development of the product, men who can give accurate technical and general information to users of portland cement.

The specific subjects taken up in the classroom include: the study of the fundamentals of quality concrete including laboratory work on mixes; principles of pavement design; quality control in the field; study of all standard specifications relating to portland cement; concrete, concrete products and soil-cement; study of concrete sections of standard building codes; manufacture of concrete masonry units, concrete pipe, precast concrete floor units, waterproofing, admixture paints, floor finishes and mortars.

• In the P. C. A. course group at the left are the following: Bottom row, L. S. Mackay, William Sorenson, Don Houghton; back row, A. J. McElrath, E. F. J. Clark, C. C. Boyd, J. Surtell, J. C. Braden, R. E. Knarr and D. A. Dorward.

• In the lower group are (left to right): William Sorenson, J. A. Ruhling, Thomas Taylor, L. R. Hill, C. C. Boyd and L. S. Mackay.

1946 Talc Products Output Sets New U. S. Record

A new high record in the mine production of talc, pyrophyllite, and ground soapstone was made in 1946, according to reports by producers to the U. S. Bureau of Mines. All-time records were also made in both quantity and value of these commodities sold or used. Total imports were much larger in 1946 than in 1945, both in quantity and value, owing to the increased quantity of ground materials brought in. Exports of "talc, steatite, soapstone, and pyrophyllite, crude and ground" increased both in quantity and value in 1946, and exports of "powder—talcum (in packages), face, and compact" were over $1,000,000 greater in value in 1946 than they were in 1945.

Unfavorable Conditions Fail to Slow Output Of Limestone in Missouri

According to information furnished by the Missouri Limestone Producers Association in its *News Letter*, cumulative contract deliveries in the state from January 1 to October 15 total 1,584,510 tons, as compared with 1,429,677 tons for the same period in 1946. Total undelivered orders to October 15 amounted to 843,551 tons, as compared with 554,109 tons undelivered at that time last year.

Missouri producers are making an outstanding record of production this year despite the prolonged wet spring and the work stoppages during June and July.

Father and Sons Organize Company to Run Arkansas Plant

A father and his two sons, W. A., Jack L., and A. A. Childress, have formed a new company which has purchased the Arkansas Limestone Products Company near West Fork, Ark. The firm will operate and expand the business, to be known as the A. C. Lime and Gravel Company, whose plant is located near West Fork, Ark.

Chat, gravel and limestone will be the products, according to A. A. Childress, general manager. The owners anticipate that the company will serve an area within a 100-mile radius of Fayetteville.

1946 Dimension Stone Output Shows Gain Over 1945 Figures

Dimension stone (exclusive of slate) sold or used by producers in United States in 1946, as reported by the producers to the U. S. Bureau of Mines, totaled 1,374,580 short tons, valued at $32,972,200, an increase of 30 percent in quantity and 85 percent in value, as compared with 1945. This total includes all dimension stone—blocks or slabs of natural stone that are cut or trimmed to definite shapes and sizes—sold or used for rough construction, cut stone, slabs, mill blocks, rubble, monumental purposes, paving blocks, curbing, and flagging.

The quantity of dimension stone used as building stone continued the upward climb begun in 1945 after reaching the all-time low in 1944. Sales of building stone in 1946 (9,166,390 cubic feet, valued at $13,767,873) showed an increase of 87 percent in quantity and 151 percent in value, as compared with 1945, but amounted to only 26 percent of the all-time high reached in 1929.

Fire at Cerulean Stone Co. Razes Quarry Buildings

Facilities of the Cerulean Stone Company at Cerulean, Ky., were destroyed by fire on September 27. The 40-year-old structures, partially insured, burned to the ground in flames fed by a high wind.

Company President Mack Hopson stated that a new plant would be erected at once, all buildings to be constructed of concrete and steel.

Construction Volume Down From 1946 Records for January-September Period

The F. W. Dodge Corporation has reported that contracts awarded for construction in the 37 states east of the Rocky Mountains during the first three quarters of this year totaled $5,626,111,000, representing a decline of 6 percent from the total reported for the corresponding nine months of last year.

Areas showing contraseasonal gains in September over August included upstate New York, northern and eastern Ohio, the Middle Atlantic states, Minnesota and the Dakotas, western Pennsylvania and West Virginia.

Projects classified as publicly owned are running substantially in advance of 1946, accounting for 29 percent by dollar volume of all building and construction contracts reported in the 37 states in the first three quarters, the corporation's figures show.

New England: Construction volume as measured by contracts awarded in the first three quarters of this year was 12 percent less than in the corresponding three quarters of last year. The total volume of awards for this year through September totaled $389,376,000.

Metropolitan New York and northern New Jersey: With a total construction contract volume of $695,543,000 reported for the first nine months of this year, the record shows a decline of 1 percent compared to the first three quarters of last year.

Upstate New York: Construction contracts in the first three quarters totaled $172,938,000, and were 19 percent less than during the comparable period of last year. All major classes of construction shared in the decline.

Middle Atlantic States: The nine-month total reached $719,344,000, representing a drop of 9 percent from the same period in 1946.

Southeastern States: The construction contract volume of $674,044,000 reported for the first nine months of this year was 16 percent less than the total for the corresponding period of last year.

Western Pennsylvania and West Virginia: Construction contract volume in this area was running 12 percent ahead of that shown for last year, based on the first nine months.

Eastern and northern Ohio: Contracts awarded in the first three quarters totaled $276,839,000, indicating a 23 percent decline compared to the first nine months of last year.

Southwestern Ohio and Kentucky: The volume of construction contracts in the first nine months of this year totaled $181,990,000, down 6 percent from the total shown for the first three quarters of 1946.

Southern Michigan: Construction contract volume for the year through September was 4 percent greater than during the first three quarters of last year. The total of all awards was $311,603,000.

Northern Illinois, Indiana, Iowa, Wisconsin, northern Michigan: A 27 percent decline in contracts awarded in the first nine months of this year, as compared with last was reported for this area. The nine-month total was $622,280,000.

Eastern Missouri, southern Illinois, western Tennessee and Arkansas: A sharp gain of 29 percent in construction contracts awarded during the first three quarters of this year, as compared with last was reported for this area. The total awards of $334,215,000.

Louisiana and Mississippi: Substantial increases in all major classifications of construction during the first nine months of this year, as compared with last year were reported on the basis of contracts awarded. The total of all awards in the first three quarters was $144,747,000, representing an increase of 60 percent over the corresponding period of last year.

Minnesota, North Dakota and South Dakota: An over-all decline of 11 percent in the volume of construction contracts awarded during the first three quarters, as compared with the corresponding period of last year was reported for this tri-state area. The total volume through September for this year was $179,613,000.

Western Missouri, Kansas, Nebraska, Oklahoma: An over-all gain of 7 percent in construction contracts awarded during the first nine months of this year, as compared with the corresponding period of last was reported for this area. The total volume this year through September was $246,380,000.

Texas: Contracts awarded for construction in Texas during the first nine months aggregated $457,581,000, indicating a 9 percent gain over the corresponding period of last year.

According to the reports of producers to the Bureau of Mines, the United States produced 15,132,145 short tons of salt valued at $44,816,498 in 1946—a 2-percent decline in quantity from 1945. Three types of salt contributed to the total as follows: almost 56 percent was brine (salt content); 23 percent was rock salt; and 21 percent was evaporated salt. The salt was produced in 13 states and Puerto Rico, at 73 plants owned by 50 companies.

La Cruz Azul Makes Plans For Expansion of Facilities At Lagunas, Oaxaca

La Cruz Azul, S.C.L., whose main plant is located at Jasso, Hidalgo, Mexico, is modernizing and expanding its plant at Lagunas, Oaxaca. These facilities were originally designed for 100 tons by the dry process. A project is now under way to add a 350-ft. kiln and new grinding equipment. The expanded capacity at Lagunas is expected to be about 475 metric tons daily.

The kiln will be operated in conjunction with a 4-ft. 6-in. by 70-ft. air-quenching clinker cooler. High thermal efficiency is expected with the long dry-process kiln.

La Cruz Azul is reported to have laid plans for a large-capacity plant and has already taken the preliminary steps for working out the design of the equipment and the general layout of the plant, which will operate by the wet process.

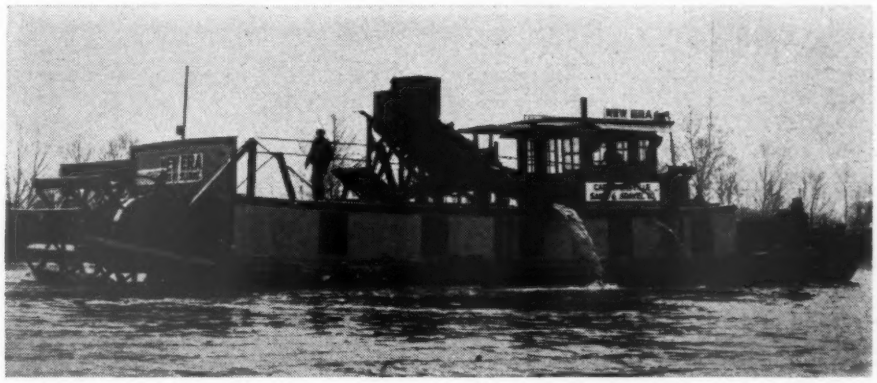
J. Balducci Buys, Reopens Gouverneur Limestone Co.

The Gouverneur Limestone Company, Gouverneur, N. Y., has been purchased by John Balducci of Canastota, N. Y.

Pumping operations have been started to remove water which has accumulated in the quarry during the past three years' idleness. New machinery will be installed and operations are expected to get under way within a few weeks. Agricultural lime and crushed stone will be the main items produced this winter.

The Gouverneur Limestone Company was first organized in 1915 by H. H. Hodgkin, G. Wilson Dodds and Jayson Jones. Work at the quarry ceased in March, 1944, because of the labor shortage. Mr. Balducci, who has been affiliated with the Warlock Stone Company of Canastota for the last 25 years, will revamp the entire plant.

An addition and alterations at the plant of the National Gypsum Company at Fort Dodge, Ia., have been begun. The cost of the modernization program is estimated at approximately $250,000.



• The "New Era" may not be the most beautiful craft that ever graced the Mississippi's muddy waters, but her owners, the Caruthersville Sand and Gravel Company of Caruthersville, Mo., say that she can and does perform. Built in 1925, the 60-ft. combination tow-boat and sand-pumper produces about 375 cu. yds. of gravel or 310 cu. yds. of sand in a normal day's operation. Power from the 4-cylinder General Motors diesel engine is simply transferred from boat propulsion to sand pumping by shifting pulley belts and manipulating a lever in the wheelhouse.

New Virginia Gravel Plant Incorporates Many Post-War Features

By WALTER E. TRAUFFER

another ON THE SPOT report

ONE of the best and most interesting new sand and gravel plants built since the end of the war is that of the Dixie Sand & Gravel Corp. near Petersburg, Va., which went into operation on June 15, 1947. This plant is notable for the high capacity obtained with a minimum of equipment, yet it combines simplicity, unusual flexibility and high screening efficiency. It is built entirely of concrete and steel with the conveyor and screen supports and superstructures built of all-welded steel I- beams, angles and tubes welded on the job. Also of interest is the fact that this plant is one of the first to use a new type of vibrating scrubber screen. The use of large-capacity haulage units is another feature.

Capacity and Products The plant was designed for a maximum capacity of 300 to 350 t.p.h. and an average daily output of 250 t.p.h., including about 80 t.p.h. of sand. Actually it is easily handling an input of 400 t.p.h. and has had an average output of 275 t.p.h. since it went into operation. This, according to N. L. Padgett, superintendent, has been done with a screening efficiency of 99 percent, which indicates proper plant balance. Under testing conditions, with less efficient screening, the capacity was considerably greater.

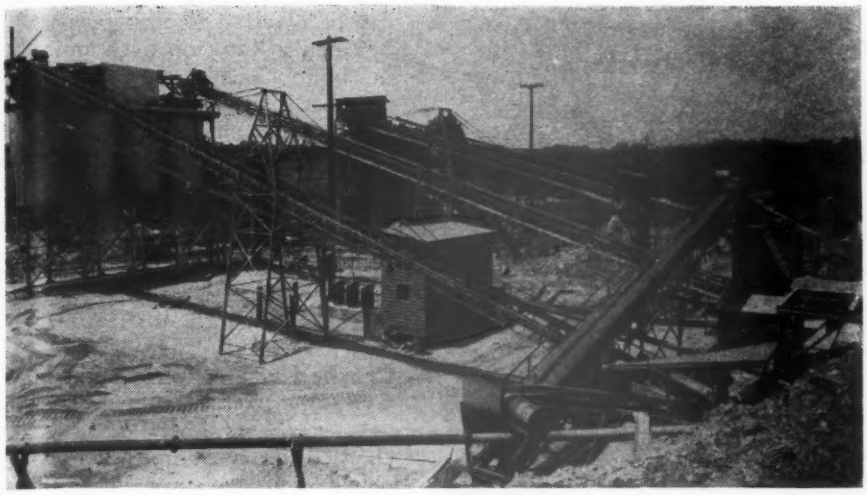
Sizes which have been produced to date include No. 12 gravel (⅜-in. minus); No. 11 gravel (½-in. minus); No. 9 (¾-in. minus); No. 7 (1-in. minus); No. 4 (2-in. minus); and 1-in. crusher run. Only four sizes of gravel are produced at one time.

History This deposit has been worked since 1922 and was acquired by the present owner, R. S. Cottrell, in 1939. The original plant was built in 1922 and the minor changes made from time to time had increased its capacity to about 125 t.p.h. at the time it was replaced by the new plant. During the war there was a tremendous demand for aggregates in this area for huge naval and other developments, and expansions and the growing industrialization, which promised to continue after the war, prompted the decision to replace this plant with a new and larger one as soon as the necessary equipment could be obtained.

The first step in this direction was taken in 1944 when the company obtained three used Euclid bottom-dump semi-trailer haulage units to replace the ordinary end-dump trucks formerly used for hauling overburden and raw material. As the next step in this direction Mr. Cottrell was able, on January 15, 1947, to obtain the services of Mr. Padgett to design the plant and supervise its construction, and to operate it after it was completed. Mr. Padgett has a long background in the sand and gravel industry, his last connection having been as superintendent of the operations of the Commonwealth Sand & Gravel Corp. near Richmond.

Design and Construction No formal plans were ever drawn for this new plant, which was laid out on the ground to fit existing conditions. This, with the fact that all fabricating of steel work was done on the site, and that

• The feed end of plant, with the four haulage units on the ramp. Note the conveyor towers in the foreground.



• A general view of the new plant with the old plant in the background.

all concrete was mixed and poured by the company's forces, freed the company from dependence on uncertain deliveries, except for items such as screens, crushers, conveyors, etc. The manufacturers of these items also cooperated excellently, considering that they all had large backlogs of orders they were trying desperately to fill. As a result of this intelligent plan of action the new plant was in full operation less than five months after ground was first broken for it.

Many handicaps had to be overcome, including the fact that the plant site was swampy, and considerable cutting and filling had to be done to put it in shape. Piling had to be driven to a depth of 30 feet under the scrubbing station, and thousands of tons of earth fill had to be brought in for the ramp to the plant feed bin. All earth handling was done with the company's excavating and hauling equipment. Not the least of the problems was the construction of the timber retaining wall holding back this fill.

As has been stated, all the footings, foundations, etc., are of concrete mixed and poured on the job. All the steel work was fabricated and welded on the job of angle iron, I-beams and steel tubes. This includes crusher, screen and conveyor supports and all bins, including the circular steel storage bins. The angle-iron conveyor frameworks were welded on the ground in 20-ft. sections and then welded together in place. The two main conveyors are supported at one end on the bins and at the other end on the ground. At the center of each of these conveyors is a tower of tubular steel, from which the conveyor framework is suspended by cables at the one-quarter and three-quarter points. The circular bin plate sections were rolled in a shop but were bolted in place. All hoppers, chutes, etc., were cut and welded at the site. Even the guard rails along the conveyors and elsewhere are welded. The crusher is supported on a welded tubular and I-beam framework.

Deposit The company's property is located on the Appomattox River about 2 miles northeast of Petersburg and is on the main line of the Norfolk and Western Ry. It contains 550 acres of deposit with from 0 to 8 ft. of overburden. The deposit averages 60 percent gravel and 40 percent sand and contains little clay or other objectionable material. Only about ½ of 1 percent of the material is larger than the 7-in. grizzly opening and is rejected.

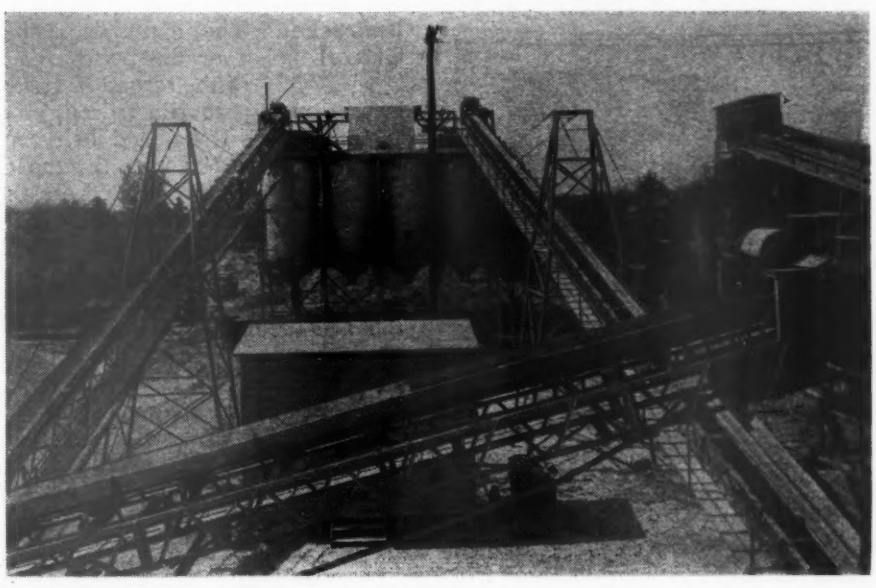
The overburden is nearly all masonry sand and is so clean and well-graded that it needs no washing or screening. From 800 to 1000 tons of this are shipped weekly.

Stripping and Loading The overburden is removed at night by the same equipment which loads from the deposit during the daytime. A Marion Model 372 dragline with a 2-cu.-yd. bucket and Caterpillar diesel engine, and a Northwest dragline with a 1-cu.-yd. bucket do the loading. These are equipped with the latest type of air controls. All hauling is now done by one new 17-cu.-yd. Euclid bottom-dump diesel tractor-trailer and three older 10-cu.-yd. machines. The average round trip haul for material for the plant is about 1 mile.

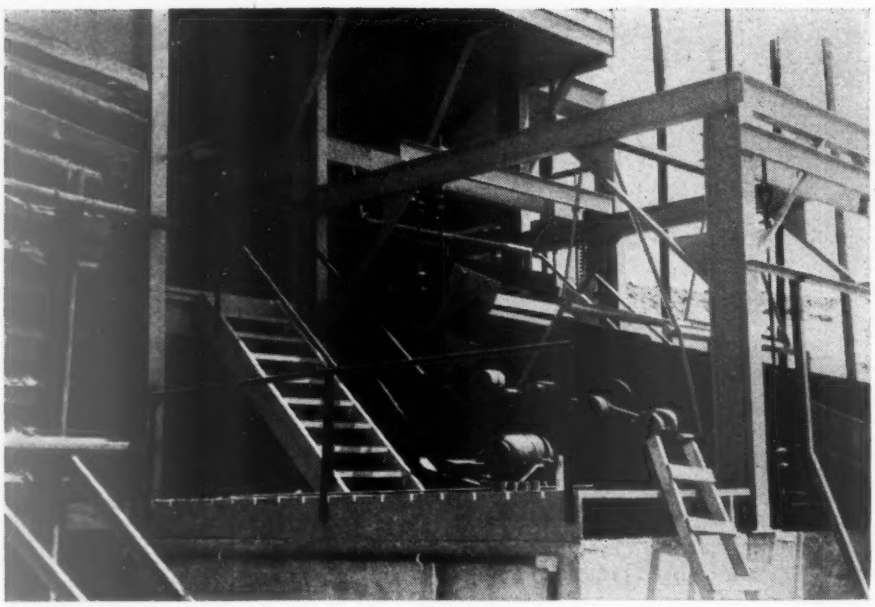
All roadways on the company's property are maintained by a Galion road grader and an International TD-18 tractor equipped with a Bucyrus-Erie bulldozer.

Scrubbing At the plant the material from the pit is dumped into a 20-cu.-yd. steel hopper, over which is a rail grizzly with 7-in. openings. An arc gate controls the discharge of material from this hopper through a chute which feeds the material full width on a 5-

• A closeup showing how material is fed from the two decks of the first screen to the same decks of the scrubber screen.



• Another view showing the conveyors for uncrushed and crushed gravel to the sizing screens over the bins.



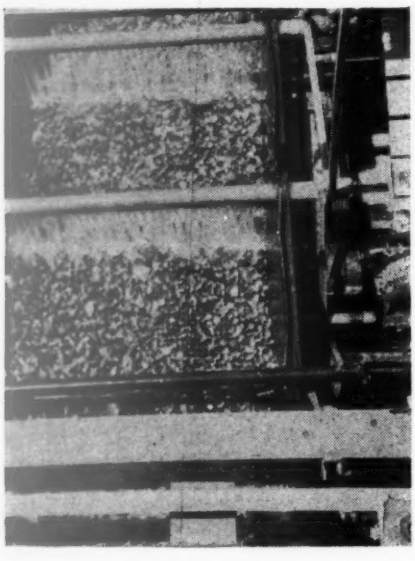
• A closeup showing the primary screen under the plant feed hopper and the scrubber screen (right).

by 12-ft. Tyler Ty-Rock 2-deck screen. This has 1⅛-in. openings on its top deck and $\frac{3}{16}$-in. on its bottom deck, and is equipped with washing sprays.

The material over each of these decks is discharged to the corresponding deck of a 5- by 10-ft. Tyler Ty-Rock F600 double-deck repulping trough scrubber screen which usually has 1⅛- and $\frac{3}{16}$-in. wire cloth. This is one of the first installations of this new type of screen and it has two scrubber troughs on each deck, between screen sections. High-pressure water sprays scrub the material thoroughly in these troughs and its overflows to the next screen section. These screens completely remove the sand.

Sand The fines passing through the bottom decks of both screens flow with the wash water into a 22- by 14-ft. concrete sand sump which is 6 feet deep. If necessary the water from the two final-sizing screens over the bins can also be flumed to this sump. An 8-in. Nagle centrifugal slurry pump reclaims this sand and pumps it into two open holes alongside the railroad siding. These holes are each 500 ft. long, 75 ft. wide and 30 ft. deep. The sand is loaded from them as required into railroad cars for shipment by a 2-cu.-yd. Link-Belt steam locomotive crane. This will soon be replaced with a 20-ton diesel locomotive crane. This sand passes all Virginia state highway department specifications.

This pump, according to Mr. Padgett, pumped about 75,000 tons of sand up to September 9 without trouble of any kind. It handles from 150 to 200 tons of sand per hour using from 1800 to 2000 g.p.m. of water.

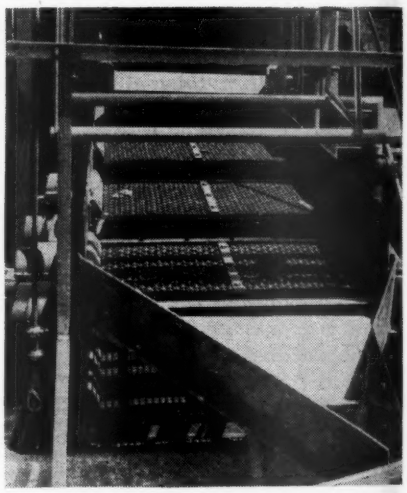


• The same screen in operation, showing the scrubbing action of sprays.

Uncrushed Gravel The material passing over the bottom deck of the second or scrubber screen (⅛- to 1-in.) drops on a 24-in. by 165-ft. inclined belt conveyor which carries it to the top of the two north end bins. There the material is discharged on a 5- by 12-ft. Tyler Ty-Rock F600 2-deck screen equipped with ½- and ⅛-in. wire cloth and washing sprays. With this arrangement ½- to 1-in. gravel (No. 7) goes into one bin and ⅛- to ½-in. (No. 11) into the other. There are no throughs. As the No. 7 gravel must have some No. 11 in it a third chute is so arranged that any desired percentage of No. 11 can be diverted for this purpose.

When a 2-in. top deck and a ½-in. bottom deck are used on the scrubber screen no change is made at the bin screen. The material off its top deck is then ½- to 2-in. straight No. 4 gravel. Part of the No. 11 off the bottom deck is in this case blended with the No. 4 to give a blend down to ⅛ in. The No. 11 gravel is in great demand for surface treatment.

Crushed Gravel The plus 1-in. gravel off the top deck of the scrubber screen is discharged on a 30-in. by 30-ft. inclined belt conveyor at a sharp angle to the screen, which travels at the rate of 130 f.p.m. so that it can be used as a picking conveyor when clay balls are encountered in the deposit. This conveyor is followed by a 30-in. by 75-ft. inclined conveyor which carries the gravel back past the screen and at right angles to it. This conveyor has a speed of 250 f.p.m., and discharges the gravel on a 4- by 8-ft. Tyler Niagara single-deck dry screen with ⅞-in. openings.

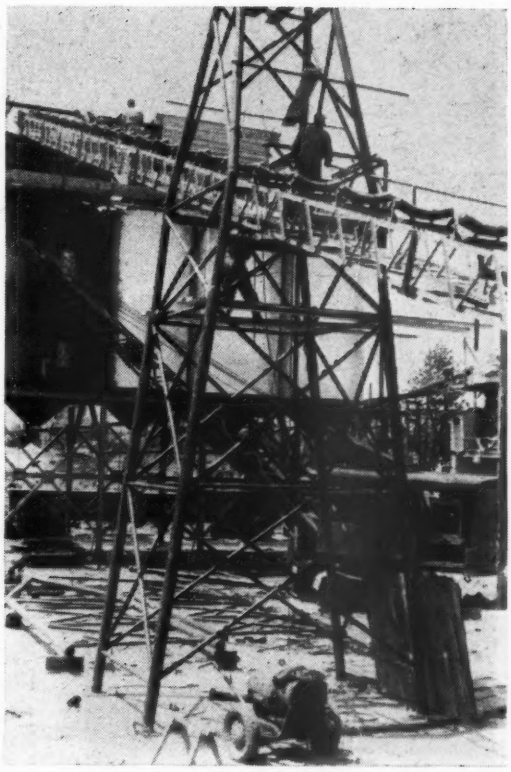


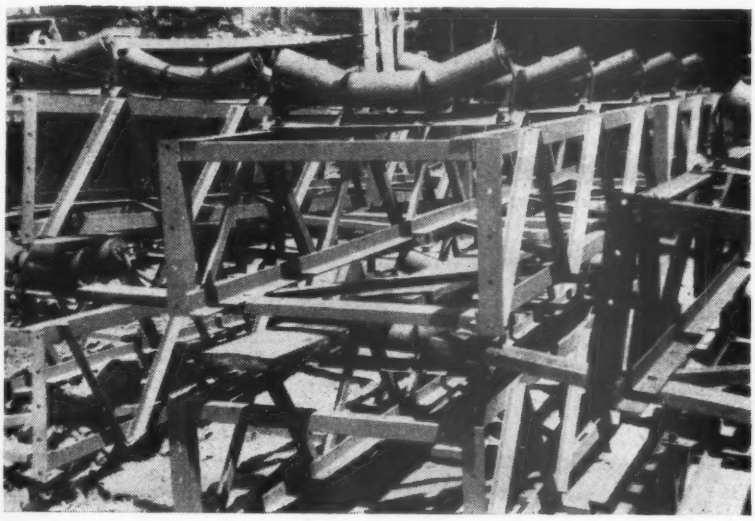
• The vibrating scrubber screen with the two repulping troughs.

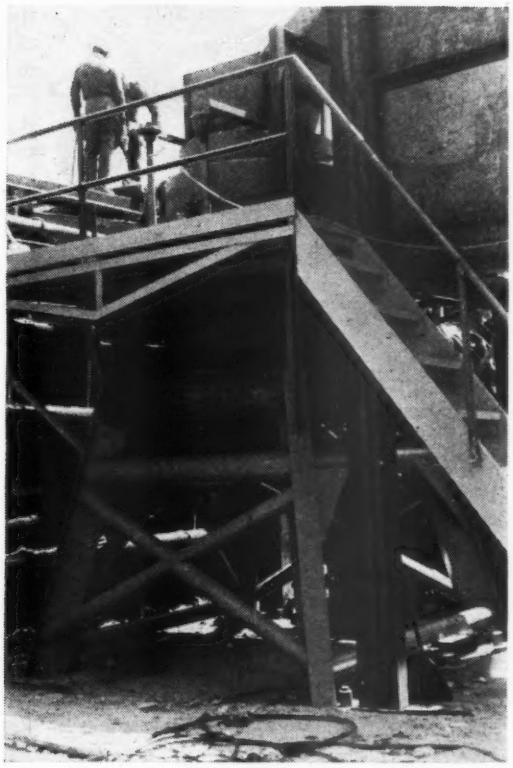
When 1-in. crusher-run gravel for highways is being made this screen acts as a chute to the Symons Nordberg 4-ft. short-head cone crusher which is set at ½-in. maximum opening.

When No. 4 gravel (1- to 2-in.) is being made, the screen cloth is changed to 2¼ in. and the crusher is set at ¾ in. Other combinations can also be made.

In any case the material passing through this screen drops into a 20-ton steel bin from which it is fed, together with the product of the crusher, on a 30-in. by 170-ft. belt conveyor to the top of the south end of the storage bins. There the







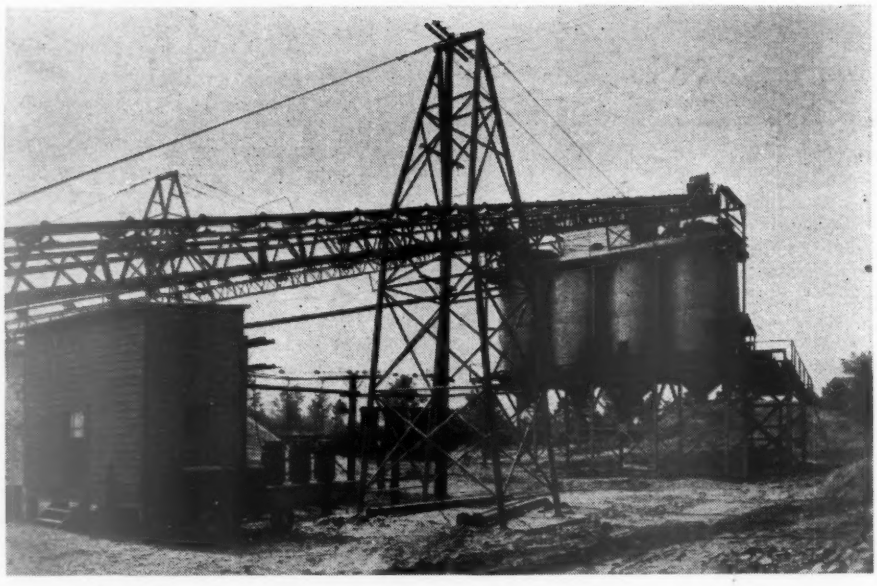
• Left, top to bottom: Welding together one of the tubular steel conveyor towers on the job.

• Some of the all-welded conveyor framework, also welded on the job. • One of the two sizing screens above the bins.

• Right, top: Erecting one of the two main conveyors and its supporting tower.

• Right, bottom: The crusher and its welded steel supporting framework.

material is discharged on a 5- by 12-ft. Tyler Ty-Rock 2-deck screen. When 1-in. crusher run gravel is being produced ½-in. cloth is used on the top deck and ⅛-in. on the bottom. The ½- to 1-in. gravel (No. 7) is then discharged into one bin and the ⅛- to ½-in. gravel (No. 11) into the other. The minus ⅛-in. material through the bottom deck is flumed to a sump in the ground as brick sand. This



• One of the conveyors to storage, showing its cable support from the tower.

• The 8-in. pump which handles sand to storage.

sand can also be flumed back to the main sand sump when more water is necessary to operate the pump. Washing sprays on this screen are used only when these products are being made.

When No. 4 stone is being produced only the top deck of this screen is used, with 1-in. wire cloth. The No. 4 gravel over the screen goes into one bin, and the throughs go into the other bin as 1-in. crusher-run gravel.

Shipping The four 140-ton circular steel bins are each 13 ft. in diameter and 20 ft. deep. They are supported on a welded I-beam and angle-iron framework on concrete foundations. Railroad cars are loaded on a track under the bins through clamshell gates. Cars are also loaded on a track alongside the bins through side chutes. A total of 2¼ mi. of storage track and siding gives adequate space for storing empty and loaded cars. Switching and spotting of cars is being done by a 45-ton steam locomotive.

Water The water used for washing and other purposes in this plant is obtained from a 200-ft. canal cut back from the river. Two centrifugal pumps, one 6 in. and one 8 in., feed to a 10-in. main pipe 300 ft. long to the plant. Later the canal may be extended and a 10-in. pump installed in a pumphouse closer to the plant.

Miscellaneous The crusher and the three pumps are driven by 150-hp. and 75-hp. motors, respectively. The four large screens are each driven by 10-hp. motors and the small one ahead of the crusher by a 5-hp. motor. All the units above are driven through V-belts, or V-belts and gears, except the picking conveyor, which has a Cleveland worm gear reducer. All the conveyors have Dodge Timken roller-bearings on their head pulleys. Most of the motors are General Electric and Westinghouse and the V-belts are Gates and Dayton. Barber-Greene and Columbus conveyor idlers are used and the conveyor belting is Goodyear and U. S. Rubber.

• The diesel dragline with the 2-cu.-yd. bucket loading from the deposit to one of the tractor-trailer units.

Ballast for Union Pacific R.R. Produced at New Oregon Plant

Morrison-Knudson Company, Inc., Boise, Ida., will produce ballast for the Union Pacific Railroad in the area of Pendleton., Ore., at a plant designed for several years operation.

The first blast, one of 100,000 yards, was shot during July, and work at the crusher was begun soon thereafter.

Large-Scale Building Plans Revealed by Catholic Group

The National Catholic Building Convention and Exposition recently outlined a program for the discussion of all phases of parochial and institutional construction and remodeling at the National Catholic Building Convention, to be held June 30 to July 3 at Chicago's Stevens Hotel. Plans have been laid to spur a multi-billion-dollar construction project.

Screenings

BY *William M. Avery*

SOME months ago we were griping in this department about the unbearable din of rivet guns on the new telephone exchange construction project across the street. That phase of the job was happily completed a number of weeks ago,

and our lacerated nerves were just beginning to convalesce when the city fathers commenced driving steel piling for the Congress Street highway which skirts our building. Now we're inclined to look back on the summer months with nostalgic sadness. By comparison with this new curse the rivet guns were like the buzzing of bees; their sound had a lazy, soothing quality that was completely unobjectionable.

To coin a snappy cliche, it just goes to prove once more that all things are relative, and we offer that to you as our thought for the month. Our true motive, however, for bringing up this rather tiresome subject was to suggest a new angle that might be employed in promoting the use of concrete in preference to steel. Something on the order of "Build Silently—Build with Concrete!" So far as we're concerned, that would be a clinching argument.

We Was Took, Dern It!

INTERNATIONAL Harvester's centennial exhibition at Soldier's field in Chicago turned up a new variation on the city slicker versus the farmer theme. A number of farm visitors to the exhibition were admiring a shiny, yellow bus which stood among the 200 machines in the display. Although the vehicle was plainly labeled "School bus", one farmer asked a young fellow standing nearby how soon the bus went downtown. "Right away. Hop in," the young opportunist replied. "The fare's only 15 cents."

Recognizing that he had a good thing, the slicker continued his chant until he had the bus half full and his pockets jingling with silver. He disappeared into the throng when one of International's employees strolled up to investigate, and the farmers sheepishly filed out of the bus. We think the out-of-town visitors probably learned more from this incident than if the bus had actually hauled them off to school,

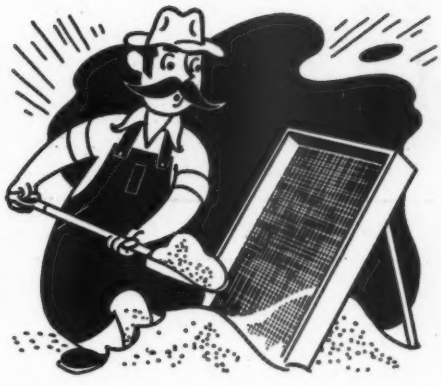
but we're a bit distressed that they were charged 5 cents more than the legal fare. *That* smacks of cheating.

Down with Zeal!

ONE of our clipping services recently sent us this fascinatin' item from the New York Times:

A Sheerness, Kentucky, constable, lying ill in bed, spied a thief loading a sack of cement onto a truck outside his window. The constable got out of bed, hopped on his bike and made the arrest. The constable's name: Zeal.

There are several points about this story with which we're not altogether satisfied. For one thing, it strikes us that in spite of his name, the constable was actually guilty of loafing at the taxpayer's expense. For a sick man, at any rate, Zeal showed astonishing vigor when he "hopped" on his bike to pursue the truck. It would have looked much better if he had crawled aboard, gritting his teeth with pain. and deputized the nearest bystander to give him a shove. Or it might have allayed



suspicion if he had used a wheel chair for the pursuit.

Another point the city fathers of Sheerness should look into is how Zeal was attired when he made the arrest. If he was properly dressed for constabulary duties, his illness becomes even more questionable. If he went cycling down the street in his nightshirt (standard bed garb for Kentucky constables), he probably should have wound up in a cell himself—preferably one with padding. There are several other loose ends involved in this incident, but we'll let 'em go. Our only excuse

for mentioning the matter at all was that it seemed in a small way to document the reports we've been hearing about another cement shortage.

McCoy's Bearings

W. J. McCOY's bearing problem, which we propounded last month, *can* be solved with only two weighings. You place 3 of the bearings on each side of the scale. If they balance, the heavy bearing can obviously be selected from the 2 remaining. If they don't balance, the search narrows down to the 3 bearings on the over-balanced side of the scale. By placing one of these on each pan, the heavy bearing is indicated directly by the scale pointer, or it becomes the third bearing in the event the scale balances.

another ON THE SPOT report

National Gypsum's New Is Soundly Designed and

By WALTER E. TRAUFFER

AFTER spending several days in and around the new rotary-kiln lime plant of the National Gypsum Company at Kimballton, Va., the writer has come to the conclusion that when better lime plants are built National will probably build them. This outstanding addition to the industry has no radical new features of design or equipment but is one of the best existing combinations of sound engineering and design, proved equipment and sound operating practice. No skimping was done anywhere. Much credit is due the company's engineering and operating staffs, which designed the plant and specified the equipment.

Features Beginning in the mine one of the unique features of this operation is the system of "blast-hole diamond drilling" which is now being developed. This system, which cannot be found in any textbooks, will be a combination of shrinkage stope and room-and-pillar mining and will require a minimum of development. The efficient development methods include the use of diesel trucks underground. The large stone pocket following the primary crusher is cut out of solid rock as is also the tunnel through a solid rock ridge in which the main conveyor to the plant operates.

In the plant it is difficult to point out any outstanding features but it can be said generally that every possible step has been taken to insure maximum economy, efficiency, and safety in operation. Automatic control systems insure against any equipment being damaged by a stoppage at any point in a circuit, and it is in this department, perhaps, that the plant is unique in the lime industry. The company has taken full advantage of everything it learned in operating its modern rotary-kiln plant at Bellefonte, Pa., and believes that its new operation is one of the most efficient in existence. This efficiency carries through the entire operation to the freight yard which is set up for one-way traffic.

Prospecting About four years ago National's alert sales department reported that there was a market in the southeastern part of the United States for the output of a large new lime plant located in the general vicinity of Roanoke, Va. B. Magee, works manager, and one of the company's geologists, at once went out on a prospecting trip and spent several months investigating all known limestone deposits within 150 mi. of that city. As a result of this exhaustive survey the deposit at Kimballton, 65 mi. by road northwest of Roanoke and 5 mi. north of Pearisburg, was selected and purchased, and subsequent experience has proved it to be a wise choice. This property has been operated for many years on a small scale both above and below ground and was purchased from the Kimballton Lime Co. The small vertical-kiln lime plant and the newer agstone plant on the property (see Pit and Quarry, May, 1940) were both dismantled to make way for the new plant.

Geology This area contains the Stone River group of limestone beds which are from 500 to 1,000 ft. thick and form one of the largest sources of commercial crushed stone and lime in this country. These beds trend northeast at a fairly flat slope of about 36 deg., varying in places probably due to faulting. The southeastern portion of this belt near Pearisburg is divided into numerous beds of which the Lenoir, Mosheim and Murfreesboro limestones are the best known.

The deposit being worked is the

• A composite general view of the new lime plant of the National Gypsum Co. at Kimballton, Va. From left to right can be seen the transformer station, the hydrate building and the Quonsett sack storage, the lump lime silos and the screenhouse with skips from the kiln burner and cooler house, the two kilns and their drive house, the kiln-feed building, the screening building, the limestone flour building and the main conveyor from the mine.

Lime Plant at Kimballton Fully Instrumented

top 70 ft. of the Mosheim limestone bed of unknown depth, which has a $CaCO_3$ content of 98 percent and up, and is considered to be one of the finest of the good limestones abounding in this region. An average analysis of this stone follows:

CaO	55.10 percent
$CaCO_3$	98.30 percent
MgO	0.29 percent
$MgCO_3$	0.60 percent

This stone seems to have originated from a microscopic shell fish and is uniform in texture with a glossy appearance. It is fairly brittle and breaks down well in shooting.

The overhanging bed of this deposit is the Lenoir limestone, which averages 400 ft. in thickness. This stone is fairly high in silica and is considerably darker in color than the dove-colored Mosheim bed. This sharp line of color demarkation is a great advantage in mining.

MINING

Old System The old system of mining used by the Kimballton Lime Co. was considered practical for small-capacity operation but not for the large-scale requirements of the new plant. This was a room-and-pillar method adapted to the slope of the deposit, and was essentially an underground quarry. The 75-ft. rooms and 60-ft. pillars had been developed for a distance of about 750 ft. The pillars originally sloped about 70 deg. but had been peeled off until they were almost vertical. The rooms were mined by benching with jackhammers and the heading for this benching was driven along the foot wall of the Lenoir limestone.

Along with the development of the new mine this old section is being worked out. A solid pillar of rock 50 ft. or more thick will be left between the old mine and the new and a ventilation raise may be driven to the surface through the center of this pillar.

New System The flat dip (36 deg.) of the Mosheim bed is not ideal for the usual methods of mining as it is too steep for conveyance and too flat for the use of gravity to clean out the broken stone. A special mining method was, therefore, developed for this deposit. This involves the driving of two parallel tunnels, 19 ft. high and 34 ft. wide, at mine level and following the strike of the upper portion of the Mosheim bed. One tunnel follows the contact with the Lenoir limestone and this is to be used as the main haulage tunnel. They are to be connected by cross-cuts every 250 ft. These tunnels are to be extended the full 2,000 ft. to the limits of the company's property. When this level is worked out many years from now another lower one will be opened.

The stope development will emanate from the foot-wall tunnel which will be used chiefly for loading the stone blasted from the stopes. The stopes will be developed by raising along the pillar wall at a 45 deg. angle to an inclined height of about 250 ft. There an 8- by 8-ft. sub-level will be driven horizontally along the strike of the deposit. A second 45-deg. raise will be driven at right angles to the first, commencing about 15 ft. above the brow of the draw hole to the contact of the Mosheim limestone.

When these raises are completed they will be widened longitudinally to cut away the lower limits of stoping ground. A slot about 14 ft. wide will then be shrunk up to the sub-level, using a combination of stoper and drifter drills. The primary drilling will then be done with rotary diamond drills from the sub-level and the drill holes will be fanned out to cut slices up to 10 ft. thick. Some of these slices will be up to 120 ft. long and all the 20 to 25 holes for a complete slice will be shot instantaneously, probably with Primacord. It may be decided to widen out the sub-level to further diminish the angle between holes, and the angle between the holes and the distribution of the explosive in them is yet to be worked out.

Progress The development of the mine got off to a late start due to delays in the completion

of the plant, particularly in those departments supplying the air, water and electricity needed for its development. For this reason the limestone produced must, for the next six months, come chiefly from the tunnels. During the plant construction period the mine produced about 400 tons daily. The output now is about 1,200 tons daily in two 8-hour shifts and this is expected to be doubled soon.

To this date about 450 ft. of tunnels and cross-cuts have been developed in the new mine. Most of the old mine floor has been graded to a ½-percent slope in favor of the load. The old crushing equipment is being dismantled and the passageway inside the portal is being widened to streamline the roadway for rapid haulage.

Drilling The tunnels are being driven with a flat back, and the roof stands up well but requires periodic scaling. Drifting was started with a "burn cut" and a drill pattern with 70 holes, using as much as 550 lb. of explosive per round. This pattern has now been modified to about 39 holes using a "V" cut with about 300 lb. of explosive. With this method a 12-ft. round is taken out every 8-hr. shift. Full advantage is taken of any seams or small caves for leverage in blasting.

A "Jumbo" is used for driving the tunnels, but Cleveland wagon drills are used for the bottom holes. The Jumbo is mounted on an old Linn crawler truck chassis which is now powered by an electric motor. It has two levels, each mounting an 18½-ft. drill column. Three Ingersoll-Rand DA35 drifters are mounted on each column. The minimum diameter of the holes in the tunnel pattern is 1⅝-in., and this is obtained through the use of 1¼-in. round perforated drill steel and Ingersoll-Rand Jackbits.

Loading Blast Holes The loading of the rounds in the tunnel is done from a 2-deck wooden platform 14 ft. high and 8 ft. wide which is moved to the face by an Allis-Chalmers tractor. This platform is carried on the blade of the bulldozer by a special attachment. The use of this platform reduces any hazard due to stray electric currents from any source. At present 1½-in.-dia. Dupont Gelex 40 explosive is used but a higher-velocity explosive may be used later. Blasts are detonated by a Dupont electric safety switch of the locking type.

The mine is at present lighted with flood lights mounted on stands but a complete permanent system of roof lamps has been designed and will soon be installed.

Loading and Haulage At the start loading of the stone in the new mine was done with a ½-cu.-yd. Bay City shovel left over from the old operation. This machine is estimated to have loaded over 750,000 tons of stone since the Kimballton Lime Co. began underground mining in 1939. With the arrival of the larger 1½-cu.-yd. Marion electric shovel for the new mine this machine has been moved back into the old mine. The new electric shovel has a special short boom and dipper stick for low-head operation. A portable transformer mounted on skids, and provided with plug-ins, steps the 2,300-v. current down to 440 v. for this shovel.

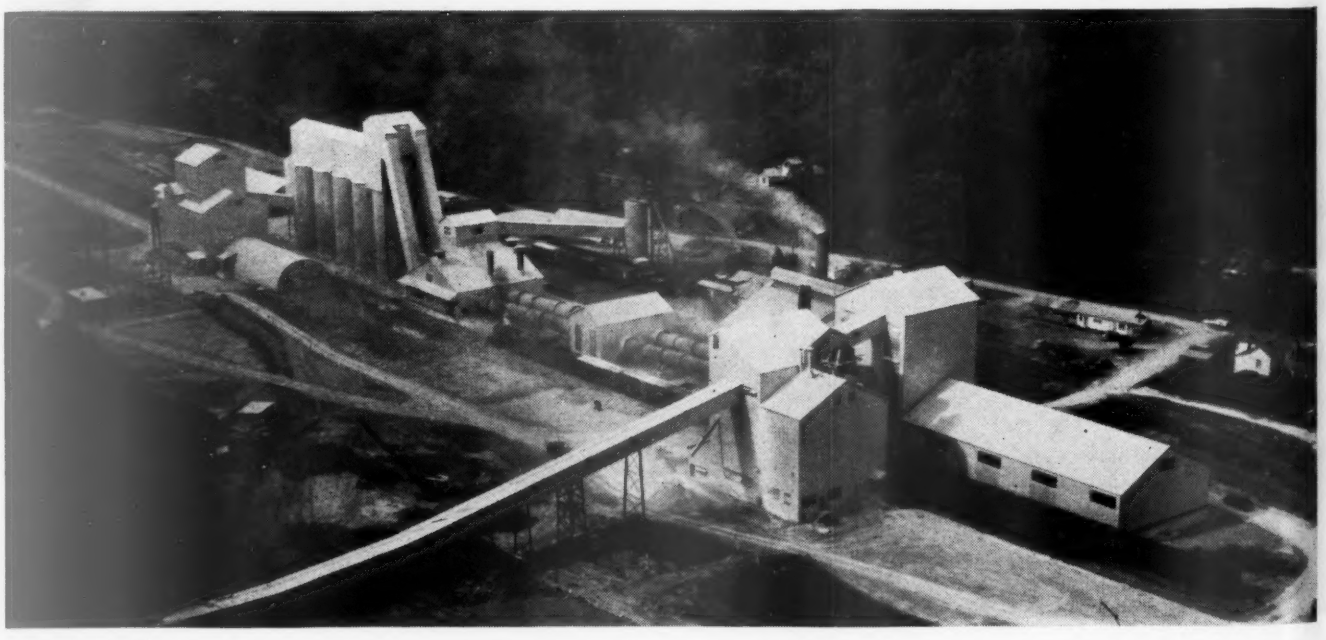
The stone is now loaded into two 12-cu. yd. Euclid end-dump trucks powered by Cummins diesel engines, but more will be added as the mine develops. The new Virginia mine law permits the use of diesel engines in limestone mines only. The natural draft is now excellent and a small blower is sufficient to insure good ventilation but a larger unit will later be installed.

PLANT OPERATIONS

RAW STONE PREPARATION

Primary Crushing The trucks haul the stone a distance of about 1,000 ft. at present to the primary crushing station a few hundred feet outside the mine opening. The stone is dumped from the trucks into a 40-ton steel hopper with rails intended only to break the impact. From this hopper the stone goes by gravity into the Pennsylvania 30- by 60-in. "Penn-Lehigh" toothed single-roll crusher which is driven through V-belts by a 200-hp., 2,300-v., motor. This reduces the shovel-size rock to 8-in. minus and discharges it into the 800-ton stone pocket below.

Storage and Reclaiming This pocket is cut into the solid rock and has natural sides and a double-hoppered concrete-and-steel bottom. Under each of these hoppers is a Hannifin-Vickers reciprocating plate feeder of English design. This type of feeder has a suspended-bar grate and baffle plate arrangement to retard



• A bird's-eye view of the plant which shows the coal storage silo (background) and the main conveyor from the mine (foreground).

the flow of the stone onto the reciprocating plate, which is moved back and forth by a pair of hydraulic cylinders. Practice is to let one feeder operate at a time and draw out the stone pocket. The second or back feeder is kept in reserve and can also be used in an emergency to empty the pocket completely. When the back feeder is used the apron of the front feeder can be lifted by means of a hand winch to provide clearance for the stone on the belt conveyor. A limit switch prevents operation of the back feeder until this apron is lifted.

The stone is discharged onto a 36-in. by 820-ft. belt conveyor (No. 4) which operates in a tunnel cut through a solid ridge of rock which separates the mine entrance from the plant. Outside the tunnel this conveyor is inclined to the top of the screen house. It has a Stearns 42-in.-dia. magnetic head pulley which removes tramp iron.

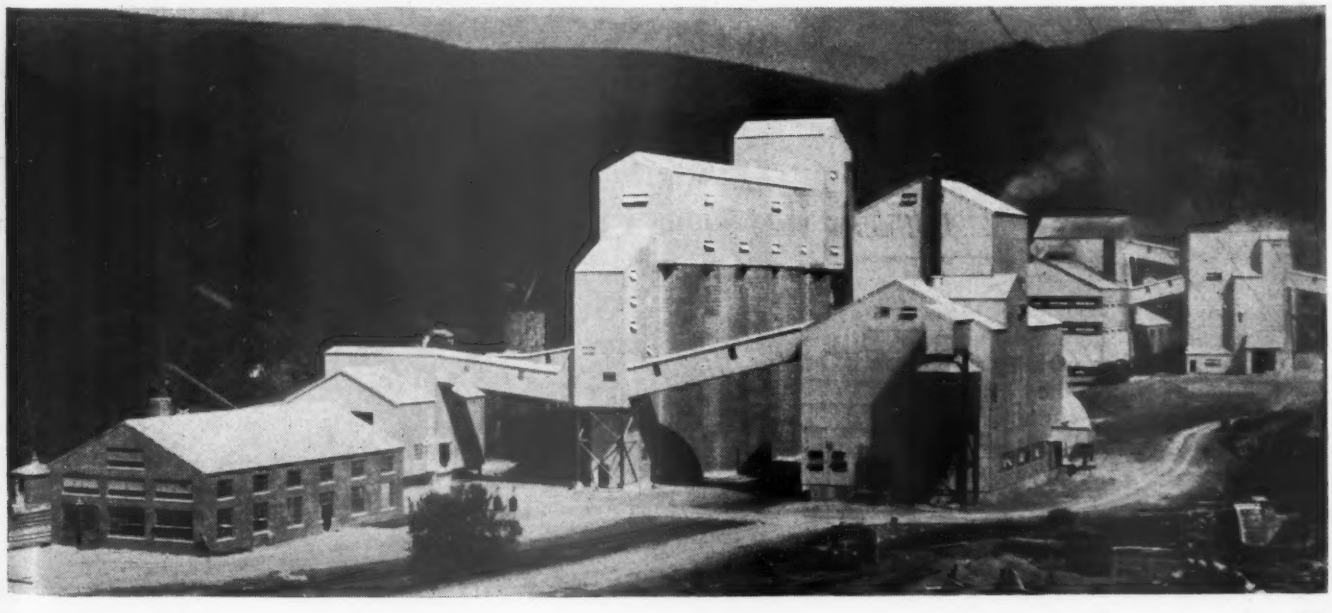
Scalping and Secondary Crushing The stone is discharged from conveyor No. 4 onto a 5- by 12-ft. Tyler Type F-800 Ty-Rock 2-deck screen (No. 95). This has 8-in. openings on its top deck, and the plus-8-in. stone goes through a chute to the 24-by 60-in. Pennsylvania "Armorweld" single-roll secondary crusher. This is driven through V-belts by a 200-hp., 230-v motor. The 4- to 8-in. stone off the bottom deck can either go to this crusher or through a chute into hopper cars for shipment.

The minus 4-in. stone through the bottom deck of the scalping screen goes to a secondary scalper—a 4- by 10-ft. Tyler Type 600 Niagara 2-deck screen (No. 96). The 2½- to 4-in. stone off the top deck of this screen can also go to the secondary crusher if desired.

• Jumbo and wagon drills starting a new drift from a cross-cut.

• Charging a tunnel face with explosives from a wooden platform attached to the bulldozer blade.

• Below: Another view of the plant, looking north. In the left foreground is the plant office and laboratory building.



• Above: The 1½-cu.-yd. electric shovel loading a truck in the mine.
• Left: A wagon drill slicing a pillar to enlarge the roadway in the older part of the mine.

Sizing The ⅜- to 2½-in. stone off the bottom desk goes to the sizing screen—a 4- by 10-ft. Tyler Type 600 Niagara double-deck machine (No. 98). The 1¾- to 2½-in. stone off the top deck of this screen is No. 3 kiln stone; the ⅞- to 1¾-in. stone off the bottom deck is No. 2 kiln stone; and the ⅜- to ⅞-in. stone through the bottom deck is No. 1 kiln stone.

The minus 2½-in. product of the secondary crusher is carried by a 61-ft.-centers bucket elevator (No. 8) to the recirculating screen—a 5- by 12-ft.Tyler Type 600 Niagara 2-deck machine (No. 97). The plus 2½-in. stone off the top deck of this screen is returned to the secondary crusher. The ⅜- to 2½-in. stone off the bottom deck goes back to the sizing screen (No. 98). The minus ⅜-in. stone through the bottom deck of this screen, together with the same-sized product from the secondary scalper (No. 96) is chuted onto a belt conveyor to the limestone flour building.

• One of the two diesel-powered 12-cu.-yd. end-dump trucks discharging to the primary crusher.

Kiln Stone The three sizes of kiln stone from the sizing screen (No. 98) go to separate sections of a 4500-ton capacity ground-level covered storage. The No. 1 stone drops by gravity; the No. 2 and No. 3 sizes are conveyed to storage by 16-in. belt conveyors. Recovery from this storage is by means of a tunnel belt conveyor under it.

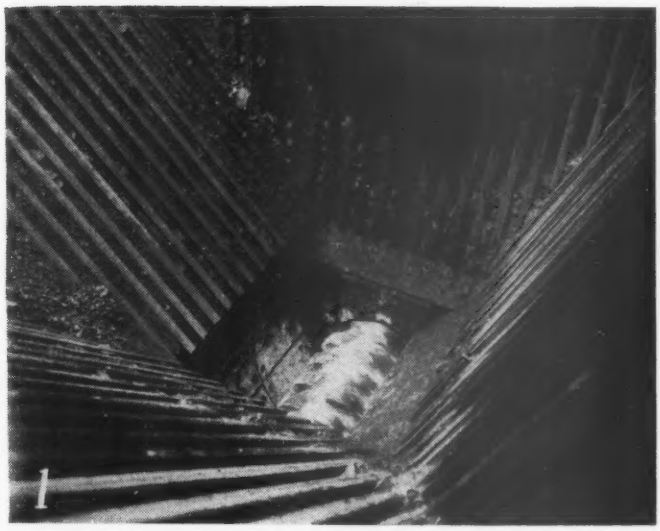
FLOUR PLANT

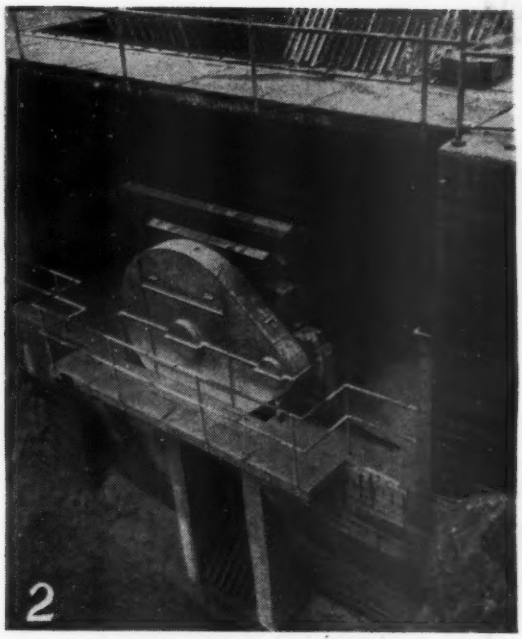
Stone Storage and Recovery The 16-in. by 104-ft. belt conveyor (No. 9) to the flour building can discharge the minus ⅜-in. stone by gravity into a yard storage pile. A ¾-cu.-yd. Lima crawler crane is used for distributing this material into storage and for recovering it back into the system, and for other purposes as well.

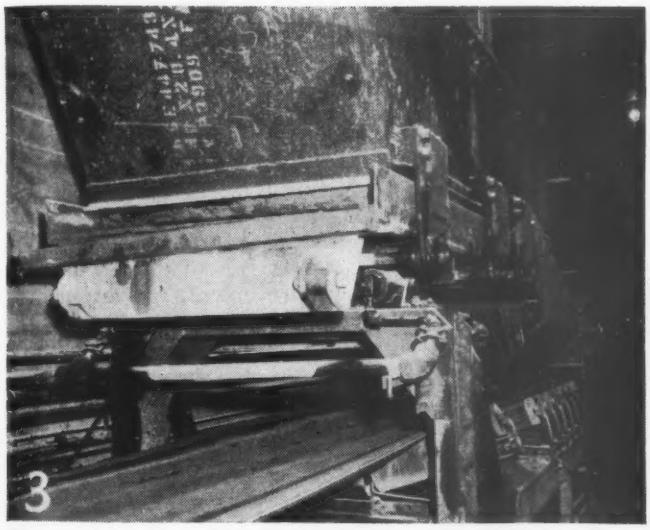
When the limestone flour plant is operating, however, the stone is usually discharged from this conveyor into a 14-in. by 52-ft. screw conveyor (No. 85) from which it is discharged through rack-and-pinion-operated sliding gates into either of two 250-ton catenary steel bins.

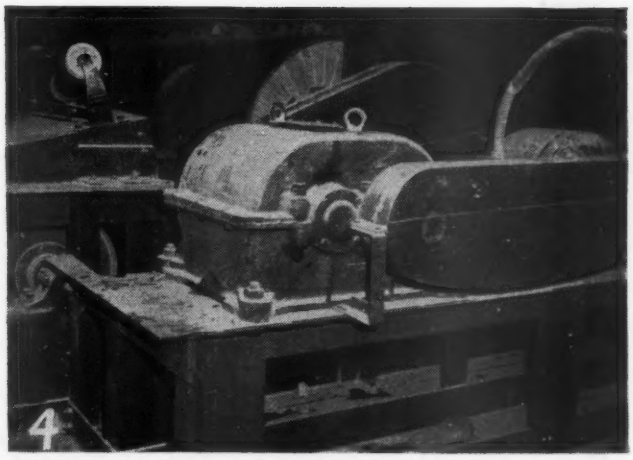
Grinding The stone is fed by gravity from each bin through three rack-and-pinion sliding gates into two Raymond 5048 high-side roller mills. One of these mills came from the agstone plant built by the Kimballton Lime Co. in 1939 and later described by the writer, and is the only piece of major plant equipment salvaged from it. These mills are practically identical and both have Raymond kiln-mill drying systems with the hot air provided to the mills at a temperature of 180 deg. F. from an oil-fired, refractory-lined furnace. Each mill has a double-whizzer separator and a cyclone. The pipes and the cyclones are insulated with National Gypsum Co. "Gold Bond" rock wool and rock wool cement.

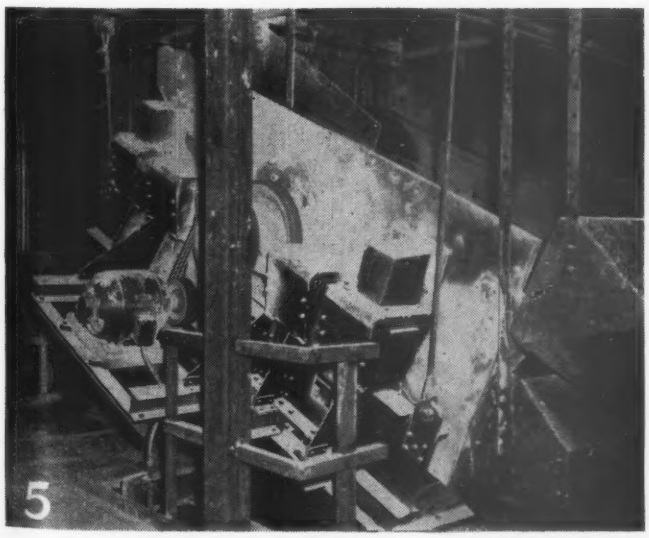
Storage and Packing The finished limestone flour from both cyclones can be discharged either direct into a bin or into a 12-in. by 47-ft. reversible screw conveyor (No. 86). From this conveyor the flour is discharged into either of two 250-ton catenary bins —one for mine dust (85 percent minus 200 mesh); and the other for agstone (75 percent minus 200 mesh). Under each bin is a 3-tube St. Regis Type 205FL bag packer. Hand trucks are used to load the filled bags into box cars or into storage.

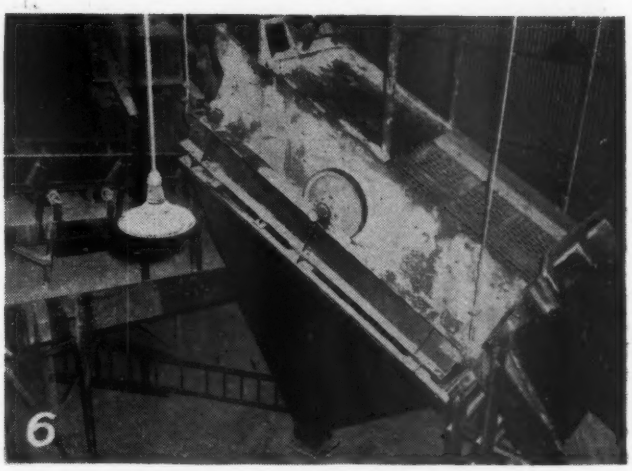












1. The single-roll primary crusher with its rail-lined hopper which is located just outside the mine opening.

2. The 30- by 60-in. roll primary crusher with discharge to the stone pocket below.

3. One of the two reciprocating feeders from the stone pocket to the main belt conveyor.

4. The head end of the main conveyor with the speed reducer drive and magnetic pulley.

5. The 5- by 12-ft., 2-deck screen (No. 95) used for primary scalping. Note cable suspension which minimizes vibration.

6. The sizing screen (No. 98) which makes three sizes of kiln stone, all of which go direct to storage.

Spillage Flour spillage from the packers is collected by a 9-in. by 50-ft. screw conveyor (No. 87), which discharges it into a 9-in. by 30-ft. cross screw conveyor (No. 88). This in turn discharges the flour to the boot of a 65-ft. bucket elevator (No. 84), from which it can be discharged back on main belt conveyor No. 4 or screw conveyor No. 85 over the mill-feed bins.

Elevator No. 84 is also used to put stone from the outdoor storage pile back into the system. The crawler crane already described transfers the stockpiled material into a hopper from which a Link-Belt 5-ft.-long apron feeder supplies the elevator. This hopper can also be used to recirculate any of the three sizes of kiln stone which can be trucked to it from the storage building.

LIME CALCINING AND COOLING

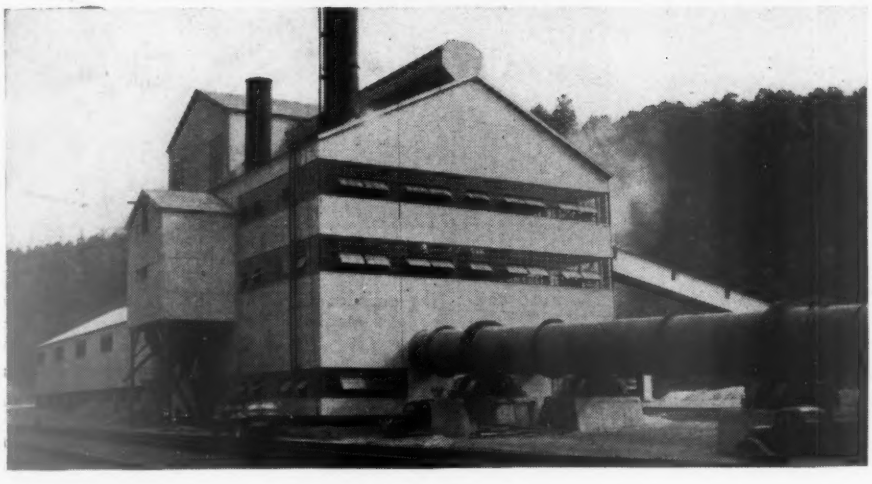
Stone Feed In the concrete reclaiming tunnel under the kiln-stone storage is a Hannifin-Vickers 60-t.p.h. reciprocating feeder mounted on rails so that it can feed from any of the 18 openings. The 16-in. by 175½-ft. reclaiming belt conveyor (No. 13) carries the stone to a 66-ft.-centers bucket elevator (No. 18) which in turn discharges it to either of the two 125-ton steel kiln feed bins. Under each of these bins is a Merrick Feedoweight driven through a Reeves variable-speed reducer by a 4-speed motor which is synchronized with the 4-speed motor of the kiln it supplies. Through this arrangement any desired ratio of feed-to-kiln speed can be set and automatically maintained.

The kiln stone is discharged by these feeders to 57-ft. bucket elevators No. 21 and 22 which feed two 3- by 8-ft. Tyler Type 300 Niagara single-deck screens. These clean the stone before it goes into the kilns. The small amount of minus ⅜-in. material passing through these screens is carried on a 12-in. by 50-ft. belt conveyor (No. 25) to a 40-ton grit bin. From the bin the grit can either be hauled away in trucks or it can be discharged to a 43-ft.-centers bucket elevator, followed by a 14-in. by 62-ft. belt conveyor (No. 32), which in turn discharges it back on belt conveyor No. 9 to the flour building.

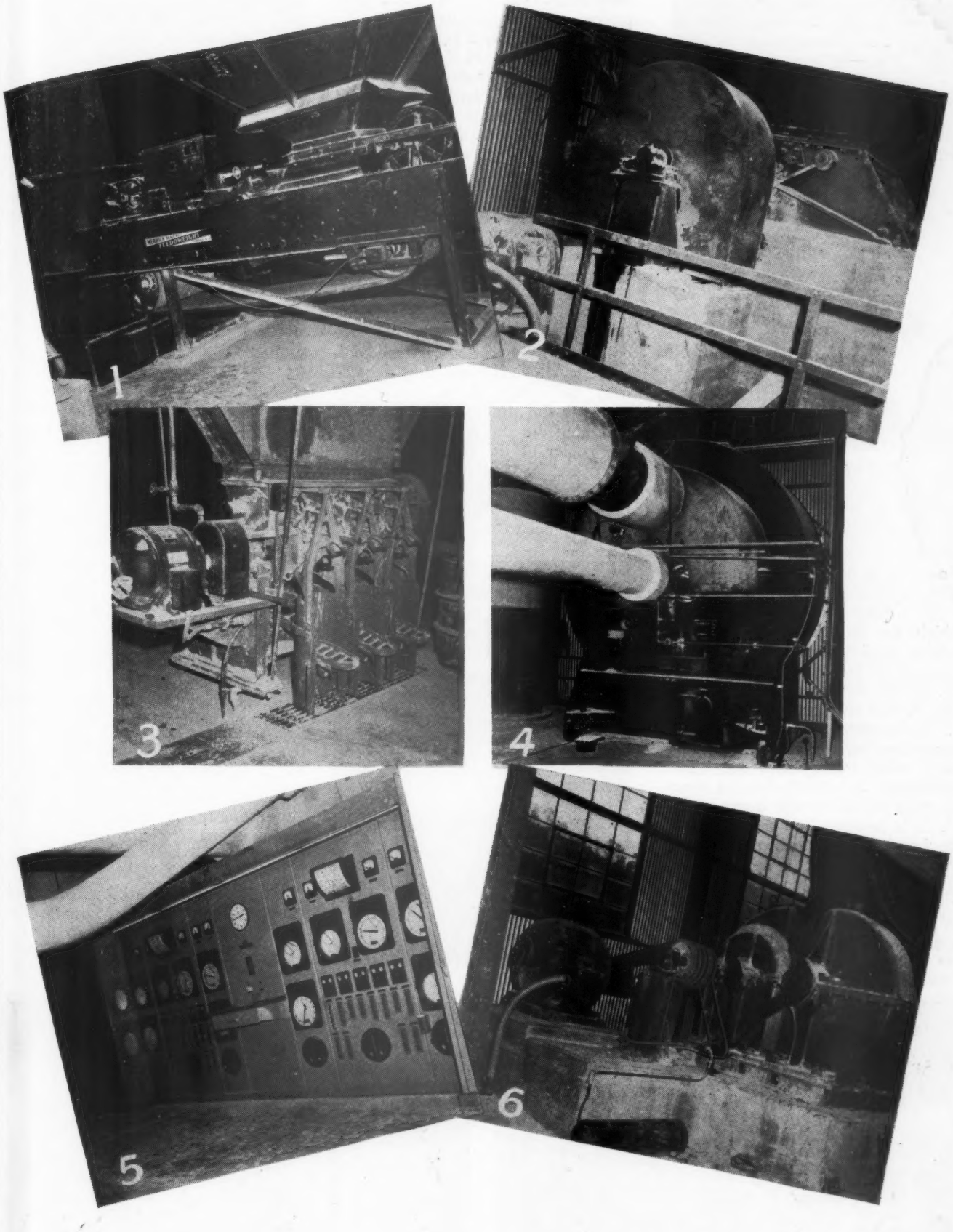
Kiln Operation The cleaned kiln stone passing over the two screens is discharged on 14-in. by 32½-ft. belt conveyors No. 24 and 23 which feed directly into the No. 1 and No. 2 kilns, respectively. Enough space has been left above the kilns to provide for the possible future installation of some type of preheater. Both kilns are 8- and 10- by 300-ft. Allis-Chalmers rotary units which are identical except for the fact that the No. 1 kiln has a quadrant-type preheater. These kilns have all-welded steel shells, are fully instrumented for automatic control, and are connected to direct-firing coal mills. Each kiln is driven by a 100-hp., 4-speed General Electric a.-c. motor, through V-belts and a Falk No. 12½ reducer, to the ring gear. Allis-Chalmers auxiliary gasoline engines are provided to drive these kilns in an emergency through additional gear reduction.

In only a few weeks of operation remarkably good results have already been obtained but there will be further improvement. An output of 300 tons in 24 hours from each kiln is confidently expected. The optical pyrometer reading on the firing zone refractories is 2600 deg. F. and the exhaust gas temperature is 520 deg. F.

Cooler Operation The lime is discharged from the kilns into two Allis-Chalmers 8½- by 50-ft. tubular rotary coolers. These



- **Left: One of the three high-side roller mills in the flour building, and its fan.**
- **Left, below: The screening and kiln-feed building with the covered kiln-stone storage at the left.**
- **Below: The insulated cyclone connected to one of the three flour mills.**



1. The weighing feeder and elevator which feed stone to one of the two kilns.

2. The 24- by 60-in. single-roll secondary crusher with drive and motor (foreground).

3. One of the two 3-tube packers in the limestone flour building. Note grating below for dust recovery.

4. Hood and insulated burner pipe of one of the two 8- and 10- by 300-ft. rotary kilns.

5. The control board on which are the instruments and controls for the two kilns and their coolers, coal mills, etc.

6. The motor, V-belts and speed reducer driving one of the kilns. Auxiliary gasoline motor is not shown.

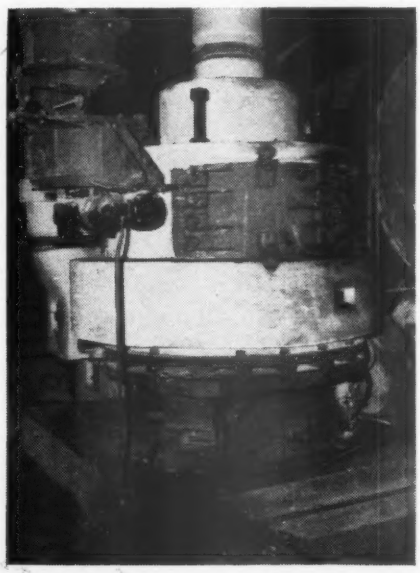
have eight tubes through which the lime passes. The cooling air for the coolers passes around and along these tubes. The lime is discharged from the coolers into surge bins feeding the skip hoists.

Exhaust Gas The kiln gases are exhausted by individual Buffalo Size 11 fans connected to the kilns by baffled dust chambers which are lined with 85-percent - magnesia block insulation coated with insulating cement. Each fan exhausts to a steel stack of 5 ft. interior diameter which is insulated on the outside with magnesia insulating block up to roof level. Dust is recovered from the dust chambers by two 9-in. by 35-ft. screw conveyors under each chamber (Nos. 26, 27, 28 and 29). These all discharge into a 12-in. by 58-ft. screw conveyor (No. 30) to bucket elevator No. 31 and into a second dust bin. This dust can be loaded into trucks or it can go back to elevator No. 31 for recirculation to the flour building.

Coal Mills The kilns are fired by two Babcock & Wilcox No. 35 direct - firing pulverizers which are fed through Bailey V6 volume coal meters from two 50-ton circular steel bins. A single 75-hp. motor drives each mill and its fan. A mill temperature of 150 deg. F. is automatically maintained by tempering hot air from the cooler stack with atmospheric air. The pulverized coal is discharged from the mill direct to the burner pipe which is insulated up to 4 ft. from the hood, from which point on it is made of a special heat-resisting alloy steel. The mill fans and their piping are also insulated.

The coal obtained locally has high volatility and a 14,500-B.t.u. content. It contains about 5 percent ash, 30 percent volatile matter, and 0.6 percent sulphur. Its B & W grindability test is from 70 to 80 percent.

Cooler Details The air for each of the two coolers is supplied by Buffalo No. 11 Type SL fans and is drawn through stacks from the atmosphere. The air from each fan goes to the cooler through a double-shell pipe. The air going through the outside annular space enters the discharge half of the cooler at its discharge end, hits a baffle near the center of the cooler and passes to the atmosphere via a stack. The air from the center pipe enters the cooler at the baffle and passes out of the feed end of the cooler into the kiln as secondary air at a temperature of 450 deg. F. Some of this air also goes to the coal mill.



Controls A Bailey control board has on it all the centralized instruments and controls for both kilns, their coolers, coal mills, fans, feeders, etc. In addition to the usual electrical controls there are controls for primary and secondary air, dampers, coal feed, and kiln draft. These include the dampers at the kiln draft fan inlets and a tempering damper which keeps the temperature of the gases entering the fan at a fixed level.

Instruments include one for indicating and recording kiln speed and the refractory temperature by optical pyrometer; one for indicating the pounds of primary air per hour and the coal mill temperature which it also controls by a tempering damper; one recording the pounds per hour of secondary air; one indicating and recording the gas temperature at the feed end and at the induced draft fan. Temperatures at the 100- and 200-ft. stations in the kiln are obtained by means of thermocouples in the refractory lining.

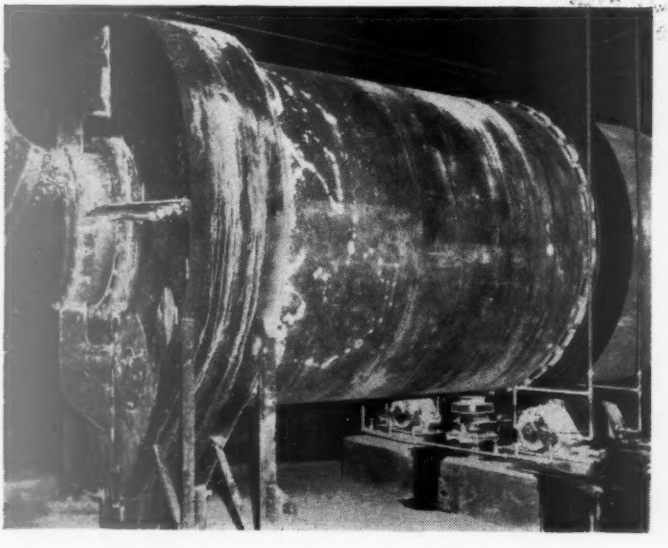
The indicating instruments include ammeters for the motors driving the kilns, the rock feeders, the cooler fans, the kiln draft fans and the coal pulverizers. Individual lights show that stone is entering the kilns and there are all the usual draft gages.

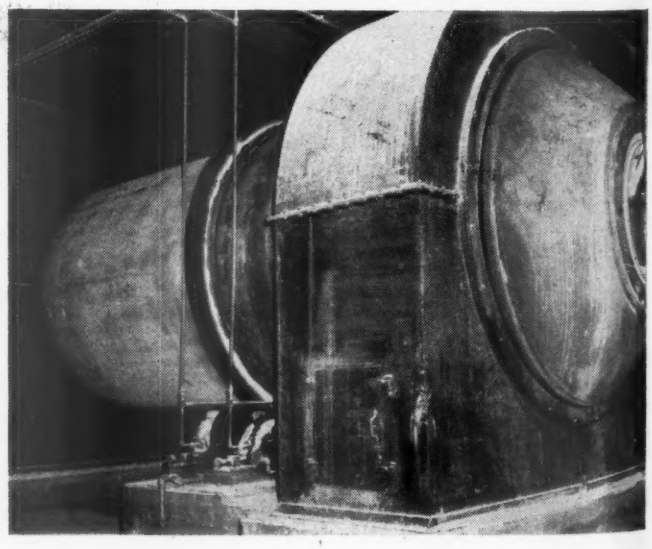
It is possible with this arrangement of controls to operate automatically so that permanent hood draft will be maintained. The operator can get more or less heat by changing only the primary air flow to automatically give additional coal feed, secondary air and induced draft.

Kiln Lining The kilns are both insulated with Johns - Manville Superex blocks except for the first 70 ft. from their discharge ends and the 20-ft. taper sections. Be-

• Right: One of the two direct-firing coal pulverizers.

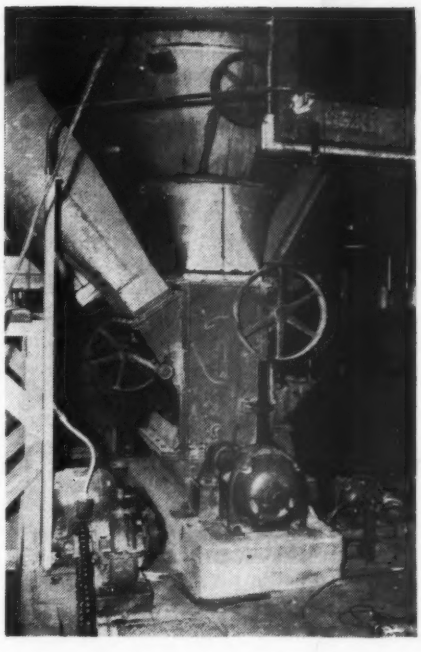
• Below: Discharge end (left) and feed end (right) of one of the 8½- by 50-ft. tubular rotary coolers.





• Left: The 12-t. p. h. continuous hydrator.

• Right: One of the two automatic hydrated lime pulverizers.



ginning at the discharge end the No. 1 kiln is lined with 10 ft. of 9-in. high-heat fire clay brick; 60 ft. of 9-in. 70-percent-alumina brick; 30 ft. of 6-in. alumina brick with 2½-in. insulating block and ¼-in. insulating cement on each side of the block; 20 ft. of 9-in. brick on the taper section with no insulation; 120 ft. of Harbison-Walker Duro abrasion-resisting brick with 2½ in. of block and ¼ in. cement insulation; 60 ft. of Duro brick with no insulation.

The lining in the No. 2 kiln is identical for the first 120 ft. through the taper section. Then it has 168 ft. of 6-in. Duro brick with 2½- and ¼-in. insulation, and 12 ft. of 6-in. Duro block with no insulation.

QUICKLIME

The quicklime is discharged from the two rotary coolers into surge bins feeding two Beaumont-Birch automatic balanced skips, which are driven by a Beaumont-Birch hoist and a 30-hp. motor. They have a capacity of 15 t.p.h. each. Limit switches control the loading, hoisting and discharge of the skips. The skips discharge the lime into two surge bins at the top of the row of five Neff & Fry 1,000-ton concrete-stave quicklime storage silos.

From the surge bins the flux lime is spouted direct to the No. 1 silo. Pneumatically-controlled gates under the surge bins feed other sizes of quicklime on a 16-in. by 114½-ft. belt conveyor (No. 44) which is equipped with Main heat-resisting belting, as are the four other belt conveyors in this department. The lime is discharged on a 4- by 10-ft. Tyler Type 72 Hum-mer 2-deck screen which is equipped with two V50 vibrators. The 1¼- to 2½-in. lime off the top deck drops into silo No. 5; the ⅝- to 1¼-in. lime off the bottom drops into silo No. 4.

The minus ⅝-in. quicklime through the bottom deck of this screen is carried on a 16-in. by 50-ft. heat-resisting belt conveyor (No. 45) to a 4- by 10-ft. Type 38 Hum-mer 1-deck screen with V16 vibrators. The ⅛- to ⅝-in. material over this screen drops into silo No. 2 and the minus ⅛-in. throughs drop into silo No. 3.

Reclaiming and Loading In the reclaiming tunnel under this row of silos are two Hannifin-Vickers reciprocating movable feeders which can discharge single sizes, or any two blended sizes of lump quicklime, onto the 24-in. by 156½-ft. heat-resisting belt conveyor (No. 48). This feeds the lime to a 54-ft.-centers bucket elevator (No. 52), which in turn feeds on a 4- by 10-ft. Type 38 Hum-mer 1-deck cleaning screen. The fines through this screen are carried on belt conveyor No. 54 to the hydrate plant. The cleaned pebble lime over the screen is carried on a 24-in. by 64¼-ft. belt conveyor (No. 53) to the bulk car-loading station. When desired the lime can be discharged from elevator No. 52 direct to belt conveyor No. 53, bypassing the cleaning screen. It is also expected that most of the minus ⅛-in. lime stored in silo No. 3 will be hydrated, and this will follow the same flow from tunnel conveyor No. 48 to bucket elevator No. 52, and thence direct to belt conveyor No. 54.

Bulk cars can be loaded on two tracks on one side of the silos. On one track box cars are loaded by a Stephens-Adamson Sinden loader which is fed from spouts. On the other track container and covered hopper cars are loaded by gravity through spouts.

HYDRATED LIME

Hydrations The minus ⅛-in. quicklime is carried from the silos on a 24-in. by 78⅝-ft. belt conveyor (No. 54) to a 200-ton catenary steel storage bin in the hydrate building. A 12-in. by 13-ft. screw conveyor (No. 61) is followed by a 12-in. by 18-ft. screw conveyor (No. 60), followed in turn by a 43-ft.-centers bucket elevator (No. 62), from which it is discharged into the 6-ton circular steel hydrator feed bin. A Hardinge 20-t.p.h. Feedometer measures the quicklime from this bin into the Eberhart Super-Mixer over the 12-t.p.h. Arnold & Weigel No. 1 Schaffer continuous hydrator.

Pulverizing A 53-ft.-centers bucket elevator (No. 63) carries the hydrated lime to a 14-in. by 9-ft. conveyor (No. 64), followed by a 14-in. by 25-ft. screw conveyor (No. 65), from which it is discharged into any of three 30-ton circular steel bins. Lime is fed by Raymond pneumatically-controlled feeders from two of these bins into two Raymond No. 3 automatic pulverizers. These have double whizzer separators and exhaust to cyclones. Each system is vented to the atmosphere through a Raymond tubular dust collector.

Storage and Packing The finished hydrate from the cyclones is discharged to a 12-in. by 26-ft. reversible screw conveyor (No. 66). The product from the dust collectors goes to an identical conveyor (No. 67). Either of these screws can discharge to either of two 10-in. by 37-ft. distributing screw conveyors (Nos. 68 and 69) over four 200-ton catenary steel storage bins. Two bins are used for chemical hydrate and the others for aglime.

Under each bin is a St. Regis No. 205FL 3-tube packer from which the filled bags are handled to cars or storage by hand trucks.

The spillage from each pair of packers is discharged to one of two 9-in. screw conveyors (Nos. 79 and 72), respectively 36 and 55 ft. long. These discharge to a 9-in. by 26-ft. cross screw conveyor (No. 71) from which bucket elevator No. 63 carries the material back to the mill feed bins.

Tailings The tailings from the two automatic pulverizers go to a 9-in. by 18-ft. screw conveyor (No. 72), followed by a 9-in. by 20-ft. screw conveyor (No. 74), a 49-ft.-centers bucket elevator (No. 75), and a 12-in. by 36-ft. screw conveyor (No. 76). This material can be discharged into a 75-ton tailings bin outside the building for truck loading. It can also be discharged into a 30-ton bin inside the building from which a Syntron feeder and a 12-in. by 23-ft. screw conveyor feed it to a third Raymond No. 5048 high-side roller mill. This mill is under the third roller-mill feed bin. It is identical with the other two, being equipped with a double whizzer, an exhauster fan, a cyclone and a tubular dust collector. Its product also goes via the previously-described series of screw conveyors to the ag-lime bin.

COAL PREPARATION AND STORAGE

Crushing The high-grade local coal for the kilns is discharged from railroad cars into a track hopper, under which is a 30-in. by 34¼-ft. belt conveyor with a 24-in. Stearns magnetic head pulley. This conveyor feeds a Pennsylvania T-1-24 Trojan ring mill which reduces the coal to ¾-in.-minus for the coal mill.

Storage A 78-ft. bucket elevator (No. 38) can discharge the coal to yard storage, from which it can be reclaimed by crane and truck. Ordinarily, however, the coal is discharged into a 200-ton Neff & Fry concrete-stave storage silo which has an unusual feature. Inside this silo near the top there is an inclined concrete slab closing off all of the silo except a small area on the elevator side. The coal drops into the pocket formed by this slab and is drawn off through a spout for use. Only when the rate of feed exceeds that of withdrawal does the coal overflow this slab into the bottom of the silo, from where it must be recirculated before it can be used. This is done by means of the same feed elevator (No. 38).

Reclamation The coal from the silo spout is carried on a 16-in. by 152-ft. belt conveyor (No. 39) to either of the two 50-ton circular steel bins over the two direct-firing coal mills.

MISCELLANEOUS

Water All water for the plant comes from a large reservoir on the mountainside which is fed by two springs. Individual cooling systems make possible reuse of the cooling water for the kiln bearings and the air compressor. A chlorinating system is now being installed.

Air Compressed air at 100-lb. pressure is provided for all purposes by a 1345-c.f.m. Ingersoll-Rand Type XRE compressor located near the mine opening. This is driven by a 250-hp. synchronous motor. A small compressor on the kiln-firing floor serves as an auxiliary to operate the kiln controls when the mine is down. A second compressor will be installed as the mine capacity increases.

Electricity Power for this plant is obtained at 33,000 v. through a loop circuit from the Appalachian Power Co. It is reduced by two separate banks of transformers to 2300 v. delta and 440 v. delta. The 2300-v. current is for the mine transformers and for the 200- and 250-hp. motors. All other motors are 440-hp. The 2300-v. compressor motor and the 440-v. cooler fan motors are all synchronous, giving about unity power factor in both ranges. The main substation has a G. E. control board with separate breakers, recording watt-meters and ammeters on each of the major circuits.

Shop and Storeroom Because the plant is located far from any large city the machine, blacksmith and repair shops are completely equipped to make almost any repairs. Equipment includes lathes, milling machines, hydraulic presses, etc. The parts and supplies storeroom are similarly complete for the same reason.

Office and Laboratory The plant office and laboratory building is in keeping with everything else in that it is modern in every way and attractive. The laboratory is completely equipped for quality control and for special work which is done there for the sales department.

Credits An example of the attention to detail in the design of this plant is the small number of motor sizes and types used, a feature which makes it necessary to carry only a small inventory of spares. This is particularly evident in the small-sized motors. The 16 belt conveyors, 24 screw conveyors, and 11 bucket elevators are driven by 45 General Electric motors in 7 size categories. These are all 1200-r.p.m., 3-phase, 60-cycle, 440-v. motors.

The belt conveyors, screw conveyors and bucket elevators were all supplied by the Link-Belt Co. They are all driven through Allis-Chalmers Texrope V-belts and Link-Belt speed reducers. All the belt conveyors are equipped with Cincinnati rubber belting except for the five hot quicklime conveyors which have Main Belting Co. heat-resisting belting. Most of them run at a speed of 150 f.p.m. and all inclined conveyors, as well as all bucket elevators, have differential backstops.

Personnel The main office of the National Gypsum Co. is at 325 Delaware Ave., Buffalo, N. Y. It operates 22 plants producing lime, gypsum, gypsum products, crushed stone and mineral wool. Its other lime plants are at Luckey, Ohio, and Bellefonte and York, Pa.

Executives of the company are: M. H. Baker, president; R. F. Burley, vice-president in charge of sales; J. C. Best, vice-president in charge of industrial sales; G. H. Tarbell, vice-president in charge of operations; D. D. Crandell, vice-president in charge of research; W. M. North, secretary; W. S. Corrie, treasurer; L. R. Sanderson, director of construction engineering. S. D. Skinner is chief engineer; F. A. Manske, general production manager; and A. B. Miner, sales manager, industrial division.

The plant personnel at Kimballton includes B. Magee, works manager; R. E. Gill, plant superintendent; Niles Eilertson, mine superintendent; H. E. Agee, quality supervisor; C. B. Cox, electrical engineer; Monroe Rule, chief of engineering and maintenance; and J. M. Huffman, kiln foreman.

Phosphate Rock Production Reaches New High in 1946

New records were made in the domestic phosphate rock industry in 1946 according to reports submitted by operators to the U. S. Bureau of Mines. Total production reached a new high at 7,168,839 long tons, of which 5,280,402 were mined in Florida, 1,316,107 in Tennessee, and 572,330 in the Western states.

Phosphate rock sold or used by producers in 1946 also attained a new peak of 6,860,713 long tons (an increase of over a million tons) valued at $31,043,821, which is over 7 million dollars more than the 1945 total. The marketed production from Florida and the Western states in 1946 was also greater than ever before and in the case of Tennessee was greater than in 1945. Imports declined; exports increased 29 percent. Apparent domestic consumption was 6,287,112 tons. Stocks at the end of 1946 had increased to 1,211,000 tons. The P_2O_5 content of the domestic phosphate rock sold or used in 1946 reached a new high—2,216,978 long tons.

Mobile Unit Proves Profitable to Minnesota Highway Contractor

ROCK crushing for both road surfacing and agricultural lime can be a profitable sideline for a highway contractor. One road contractor who has cashed in throughout southern Minnesota on this sideline is Fred Fakler of Sugar Loaf, Winona, Minn., whose portable plant turns out 450 cu. yd. of road rock and 500 tons of agricultural limestone per day. During last summer and fall he worked pits at St. Charles and at Pickwick Valley, both near Winona, with the same outfit.

Quarry equipment includes a LeRoi 210 and a Sullivan 110 air compressor; a Chicago Pneumatic wagon drill and Ingersoll-Rand jackhammers. Timken rock bits are used.

Fakler's shovels are new P&H's—a 255A, ¾-cu-yd. machine and a ½-cu.-yd. 150 unit. The shovels are hydraulically controlled and are equipped with ¾-in. 6 by 19, steel-center IPS preformed wire rope load lines.

Crushing equipment in Fakler-operated pits includes a Diamond 15- by 36-in. primary crusher with apron feeder powered by an International UD18 engine. Secondary crushers consist of Diamond 10- by 24-in. jaws and 18- by 30-in. rolls, with a Diamond 3- by 10-ft. vibrating screen. An International UD18 engine drives the 24-in. Coyle & Roth conveyor.

The agricultural limestone unit consists of a Dixie 36- by 40-in. Premier hammermill with a Cedar Rapids 10- by 42-in. vibrating screen and a Buda 250-hp. diesel engine.

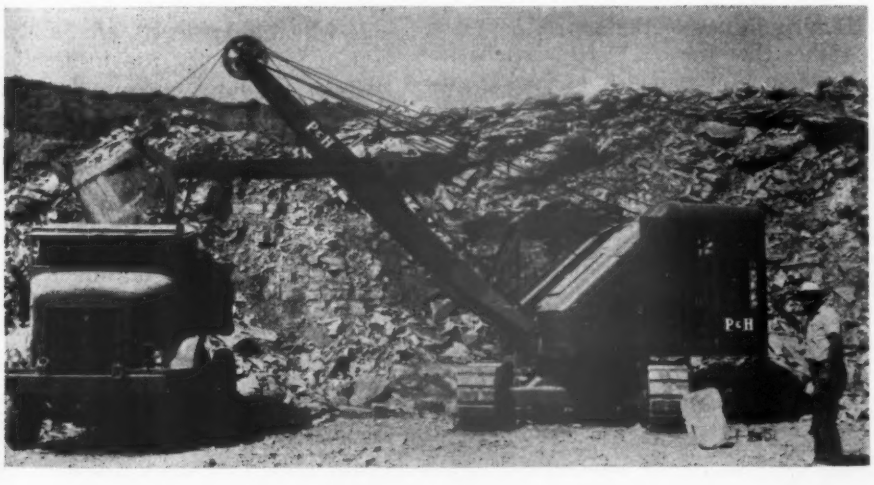
Hauling units include two International 2½-ton trucks with 6-cu.-yd. Anthony hoists and bodies and eight Ford dump trucks with 4-cu.-yd. St. Paul hoists and bodies.

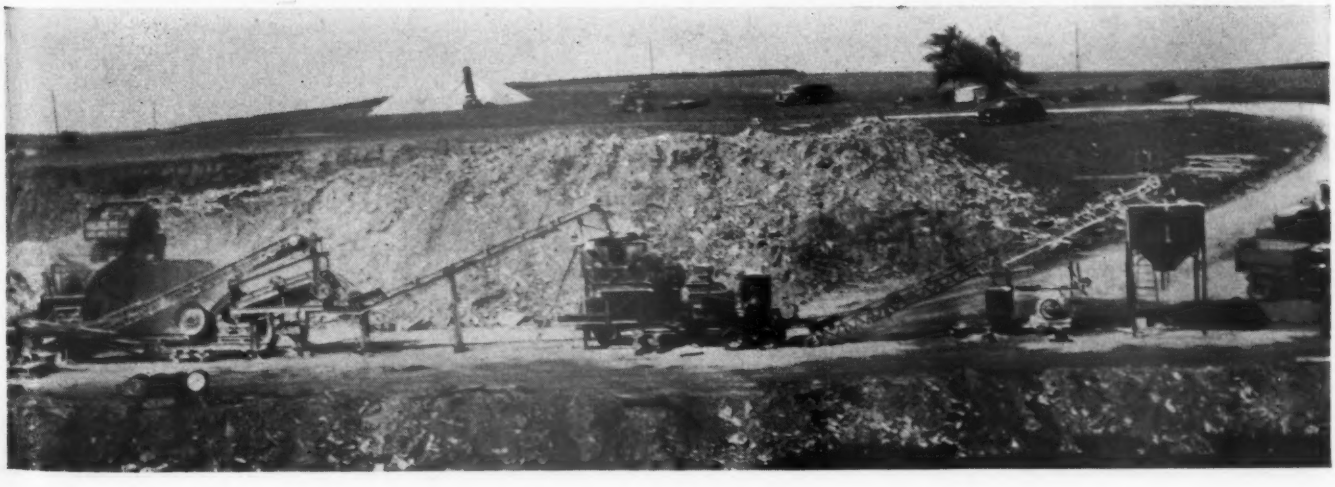
Important to the continued operations necessary to profitable pit and quarry work is the maintenance of all equipment. Fred Fakler is ready for all ordinary maintenance and most repair work with a good line of maintenance equipment. A P&H W300 portable arc welder is one dependable unit which sees a good deal of service in the pit and the Blount field service rock pit grinder is by no means an idle unit. Wear caused by abrasive material in moving parts is eliminated to a large degree through use of a Siebring steam cleaner.

One maintenance item which has been reduced to practically no headache at all is wire rope. Of course the preformed load lines on both of the P&H shovels are inspected regularly for signs of wear and cleaned of sand, rock and grit. Mr. Fakler has found preformed wire rope to be of such long life and so resistant to strain, stress and even abrasion that cable replacement no longer is a major problem.

• Below: Two views of quarry operations with Fred Fakler's mobile crushing unit at St. Charles, Minn. At the time the lower photograph was taken, the Diamond crusher was producing crushed rock for highway surfacing.

• The top picture shows a new ¾-yard shovel with ¾-in. 6 by 19 steel-center preformed wire rope load lines loading an International 2½-ton truck with 6-yd. hoist and body at the St. Charles pit.





Memphis Firm Uses Modern Portable Plant on State Job

For work on the relocation of State Route 25 between Tishomingo and Inka, Miss., the Memphis Stone and Gravel Company, Memphis, Tenn., is employing a new G.M. diesel-powered Barber-Greene asphalt processing plant.

Two 133-hp. G.M. Series 71 diesel engines are used which turn out as much as 600 tons of black top for each day's operation. One powers the drier, the graduation unit and two of the three elevators, while the second is connected with the mixer and the final elevator which feeds it.

Sand is introduced into a hopper from which it is carried by a "cold" elevator to a double drum drier. Here it is heated to temperatures ranging from 250 to 350 deg. F. By means of a "hot" elevator the heated sand is then moved to the graduation unit for separation.

New York Operator Makes Own Sand For Ready-Mix-Products Plant

By ROBERT W. SPAKE

another ON THE SPOT report

DURING the last ice-age, when tremendous glaciers covered the northern portion of the United States with a sheet of ice hundreds of feet thick, there was, believe it or not, some pit and quarry activity going on in New York state. The operator in question was old Mother Nature, who was using this same glacier as a combination dragline, attrition mill, and gyratory crusher. As the glacier came out of the North, moving only a short distance each year, but progressing steadily, pieces of rock were picked up at the base and bottom of the ice sheet. These pieces ripped and tore the bed rock foundation below the ice, adding more solids to the glacier's load. This continued for year upon year, and the ice penetrated as far south as Sherburne, N. Y., before it stopped. The stopping was not a sudden affair, for the ice continued to flow out of the North for a great length of time after the actual forward movement had ceased.

Melting of the face of the glacier had caught up with the forward surge, and as the ice became water it naturally released the rock particles encased within it. Gradually a pile of these released rock particles built up at the foot of the ice wall, and there they were washed and rewashed by the continual streams of water that were sucking away at the glacier's tall majestic beauty. As these streams merged into larger ones, and the larger streams into rivers, a natural classification took place, leaving sized gravel in certain places, and depositing fines elsewhere, perhaps as far away as the sea. The large boulders, too large for the water to carry, remained at the face of the ice-sheet, and mark the terminal moraine familiar to our Northern readers.

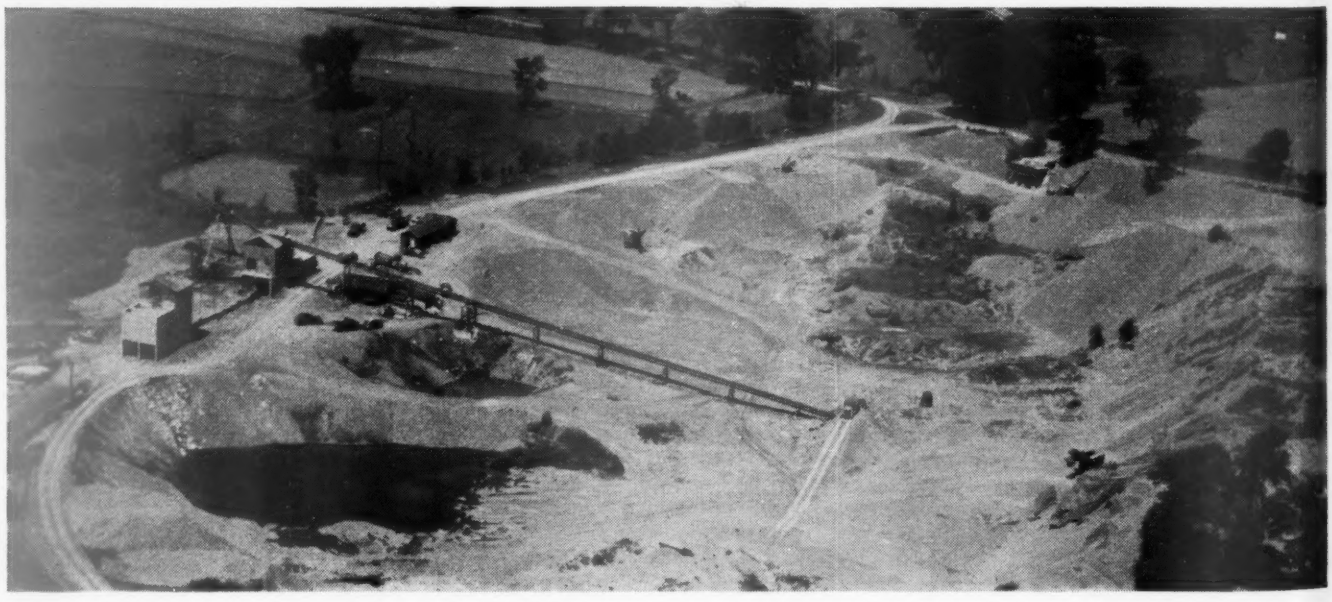
That Mother Nature did pretty well with this somewhat inefficient machinery is attested to by the gravel deposit of the Bundy Concrete Co., at the above-mentioned town of Sherburne, where a Thew-Lorain 55-D shovel works daily at the base of a 75-ft. bank of naturally-sized gravel containing practically no fines. When one realizes that there are roughly 90 more feet of gravel below the shovel's tracks, he can begin to conceive something about the time it took to put this earth in the shape it is now —geologically speaking, that is.

The gravel ranges from about 2-in. to pea size, and is almost completely deficient in fines. Harold A. Bundy, owner of the pit, sometimes wishes that the old gal hadn't been quite so thorough, for he has to go to a great deal of trouble to manufacture fine material to replace that washed away.

At the working face the material is now slightly agglomerated, which is fortunate since it prevents serious slides. The 55-D is able to work with no special precautions, and without danger to the operator. The glacial debris is loaded into two 10-cu.-yd. Linn halftracks, which take it a short distance to a loading ramp. Here they dump their loads onto a plant-made 24-in. belt feeder, through a grizzly made up of railroad rails and iron bars set in 1- by 4-in. rectangles. This prevents any stray boulders from entering the 400-ft. Continental Gin conveyor system, which takes a 24-in. stream of material to the crushing and screening plant.

At the plant there is a Seco three-deck 3- by 8-ft. scalping screen, carrying 1½- ¾- and ¼-in. wire cloth. Plus 1½-in. material goes to a Kennedy-Van Saun gyratory crusher for reduction to coarse aggregate. Plus ¾-in., minus 1½-in. material goes to a Stedman single-cage mill to produce fine crushed aggregate to meet a specification calling for 85 to 100 percent crushed particles. Minus ¾- plus ¼-in. material is fed into a Stedman double-cage mill, which is devoted to the production of sand in the range of minus 50 plus 100 mesh. All minus ¼-in. material goes directly into a plant-made wash box.

Both Stedman mills discharge onto a Seco 4- by 10-ft. sizing screen, carrying a ¾-in.-square top deck and ¼-in.-square bottom deck. Here all fines are washed out and sent directly to the wash box. Material not passing on this screen is chuted to a 24-in., 125-ft. Continental Gin con-



• An aerial view of the Bundy facilities at Sherburne, N. Y., showing the fine glacier-made gravel deposit.

• Left, top: A scene at the Bundy quarry, where a 1-cu.-yd. shovel is scooping gravel from the 75-ft. quarry face and loading it into a waiting halftrack.

• Left, center: At its destination the halftrack dumps its load on the plant-made 24-in. belt feeder which discharges onto the conveyor system.

• Left, bottom: A view of the conveyor which carries material to the sand stockpile. This pile represents the summer's stockpiling efforts for the two cage mills.

• Right, top: The 3¾-cu.-yd. shovel loading overburden into the truck above the pit.

• Right, center: A view of the crusher house. At the left is the conveyor to the bin house; at the right, the conveyor from the pit.

• Right, bottom: The 3-cu.-yd. truck mixer is about to pull away from the batching bins.

• The single cage mill, which produces fine crushed aggregate.

veyor, which also receives the discharge from the Kennedy gyratory crusher. All of this material is carried to a separate screening plant and discharged onto a 3½-deck, 3- by 8-ft. Seco sizing screen. This screen carries both ⅝-in. and 1¼-in. cloth on the top deck, and ⅝-in. cloth on the half deck, which is between the top and center screens. The second deck is ⅜-in. wire mesh, while the bottom panel has ¼-in.-square openings. Water sprays are used to facilitate separation on this screen. Five finished sizes of aggregate are chuted from the top of the screening house to one of five compartments in a concrete storage bin below.

Material can either be discharged into customers' trucks from these bins or into the Linn halftracks also used in the pit operation. The halftracks take the material to an unused portion of the pit and stockpile it by dumping from the lip of the pit, for use in winter operations when the pit itself is shut down. Company-owned 3- and 4-cu.-yd. Ford or International dump trucks may also load here for deliveries to customers or jobs.

The fines that were diverted to the wash box throughout the sizing operation receive further treatment through the action of a plant-made rake classifier. This rake drags fine material acceptable for use as sand out of the wash box and discharges it directly onto a 75-ft., 18-in. Continental Gin belt conveyor, which carries it out to an open storage stockpile. Material not utilized during the summer months remains as the winter backlog of material, and care is taken to provide an ample reserve for cold weather operation.

The deposit is overlain with 4 to 8 feet of overburden, which is stripped from the purer gravel by a Link-Belt Speeder ¾-cu.-yd. crawler shovel. The previously-mentioned Ford and International dump trucks haul this to local consumers for use as fill in various forms of construction, for which use the material is perfectly satisfactory. The same Link-Belt shovel is also used to load out trucks from stockpiles during the months when the plant is not in operation, as is a truck-mounted Universal crane with clamshell bucket.

It happens that this deposit is the only one being worked within a considerable radius of Sherburne. This fact combined with certain favorable chemical characteristics of the gravel, makes it economical to manufacture the needed fines. Local best customers for these specification-topping aggregates retailed by Bundy are nearby towns, two county highway departments, the New York state highway department, and the established local building contractors. It might be said that Mr. Bundy is one of his own very good customers, for his small ready-mix plant uses a substantial amount of aggregate each year. The company also operates a concrete pipe plant in the winter months, which absorbs the labor force from the pit operation, who otherwise might go jobless.

The ready-mix installation is a hillside-type plant, in that sand and gravel deliveries can be made straight to the batching floor and discharged directly into three Blaw-Knox weighing batchers. These materials are then dry batched into the drum of a 3-cu.-yd. Jaeger high-discharge transit mixer. Lone Star standard and high-early cement in bags permits easy batching of unit-sack mixes. The mixer is mounted on a new (1947) Ford truck with dual rear axles, and is performing in a very satisfactory manner, according to Mr. Bundy.

The entire plant is a new one, having been rebuilt completely within the last two years. Due to the very severe winters in this particular part of the country, pit operations, as mentioned, run only from May until November. The company's adjacent concrete pipe plant produces 8- to 24-in. pipe, both tongue-and-groove and bell types—plain and reinforced. Pipe larger than 24-in. is sometimes cast utilizing ready-mixed concrete.

Gypsum Production Dips Sales Normal in 3rd Quarter

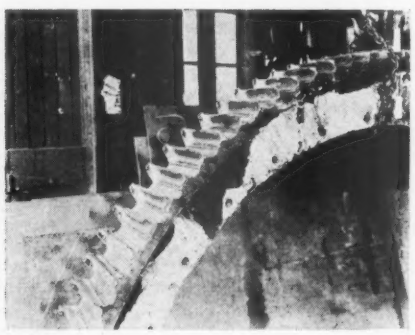
Production of crude gypsum in the normal seasonal trend, was 6 percent second quarter of 1947, reversing the lower than in the preceding quarter, according to the U. S. Bureau of Mines. Augmented by substantial imports, however, the apparent supply exceeded that of the first quarter of 1947 by 8 percent and that of the second quarter of 1946 by 17 percent.

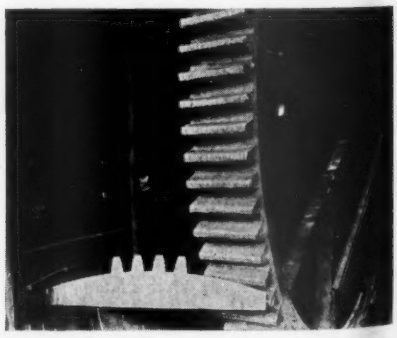
The sales of gypsum products for the six months ending June 30 were well maintained, but the trend to increased production was less evident in the second quarter than in the first. The greatest increases were shown in gypsum products for building purposes. Cement retarder was up 8 percent, building plasters 17 percent, board 26 percent and tile 80 percent, over the same grouping of products in the second quarter of 1946. Agricultural gypsum, normally lower in the second quarter than in the first, was 45 percent below the first quarter of the year and 20 percent below the second quarter of 1946.

Production of Belgian Lime Shows Spectacular Expansion

A recent issue of *Limeographs* contains the following interesting information on Belgian lime and limestone production: "Belgian production of lime increased from 297,530 metric tons in 1945 to 987,216 metric tons in 1946 . . . Production of limestone increased from 477,915 to 886,531.

One reason given for the large lime consumption of Belgium is the fact that only lime is used in all steel processing.





• Before (left) and after (right) views of a 10-ft. cast-steel sand drier gear weighing about 3,300 lb. which recently had its 10-in. teeth rebuilt by "two-tone" welding at Griff's welding shop at Coatesville, Pa. The teeth, 104 of them, were worn to a knife edge, but were successfully rebuilt by the use of 700 lb. of 3/16- and ¼-in. General Electric W-20 electrodes and a cast-iron core rod.

Slite Cement Plant in Sweden Ships Entire Output by Water

Adoption of Truck Haulage First Step in Extensive Plant Expansion Program

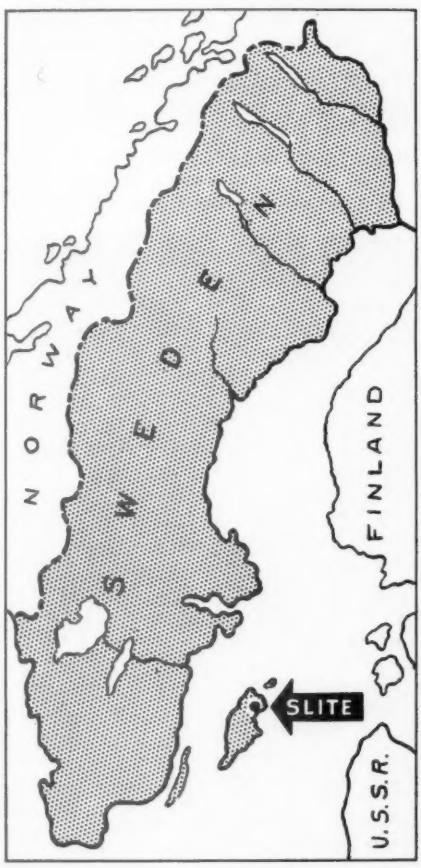
BY AARENDT de JOUNGE
General Manager
Slite Cement Och Kalk, A. B.
Slite, Sweden

THE plant of Slite Cement Och Kalk A.B., Slite, Sweden, is located on the island of Gotland in the middle of the Baltic Sea. It is situated on the shores of the bay at Slite which affords a good natural harbor. The raw material situation is perfect. The whole island is a limestone rock, and the limestone in the vicinity of Slite is naturally almost the right composition for making cement. The plant now uses about 95 percent of one type of limestone containing 78 percent calcium carbonate and 5 percent of high-grade limestone containing almost 97 percent calcium carbonate.

The quarry containing the raw material opens from one end of the cement plant. As the raw material is processed it progresses through the plant, down to the port, and into the ships.

The wet process is used, and the plant now has three kilns, the length and output of each kiln being as follows: Kiln No. 1, 300 feet and 2,000 barrels a day; kiln No. 2, 230 feet and 1,100 barrels a day; kiln No. 3, 380 feet and 2,500 barrels a day.

Another kiln, No. 4, is soon to be installed, and this kiln has a length of 420 feet and an output of 3,000 barrels a day. The improvement in the amount of output makes it necessary to modernize the machinery for crushing and hauling in the quarry. About 800,000 tons of limestone is to be broken and crushed annually.

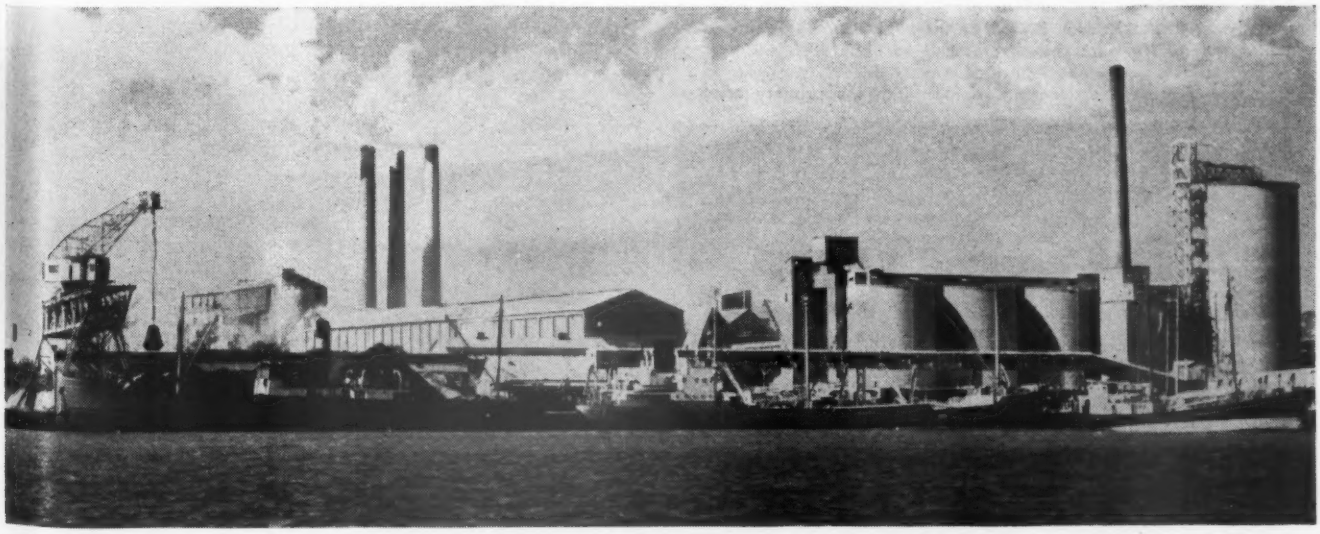


• As indicated on the map, Slite Cement Och Kalk Aktienbolag, located on the Baltic island of Gotland, occupies a unique position. From the completely modernized plant on this seagirt limestone isle, waterborne shipments of cement go to many northern European ports.

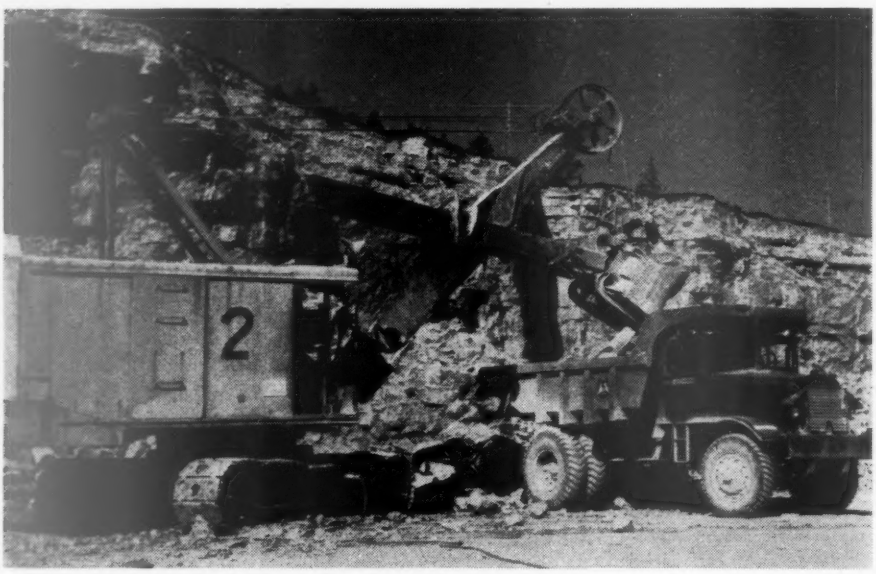
The use of cars and tracks in the quarry was discarded many years ago. Diesel tractors have been used for the last eight years along with side-dump cars running on a steel band. Even this system has now been changed to the most modern hauling methods. Fast moving 15-ton Euclid rear-dump trucks have now taken over the job. The haul is rather short, 300 feet, and the round trip is 600 to 800 feet. The height of the quarry face ranges from 50 to 90 feet. When blasting, the whole side of the quarry goes at one time. For the drilling, the company uses air drills which are remarkable because the whole air-driven machine goes down in the hole, hanging by the special rubber line and chain. The diameter of the hole is six inches.

For loading the Euclids, the company now uses two 2-cu.-yd. electric shovels and one diesel-engined P&H shovel, also 2-cu. yds. To increase the output per hour the company is going to install a new primary crusher of type gyratory No. 42, and, at the same time, the company has plans to load the truck with one 5-cu.-yd. electric shovel instead of two smaller shovels. The company should then get an average output per hour of 350 tons and a peak out-

• A waterfront view of the Slite Cement Och Kalk facilities at Slite, with loading docks and storage silos in the foreground and kilns, grinding mills and other structures in the background. When Kiln No. 4 has been installed, total production is expected to reach 8,600 barrels per day.



• A general view of the quarry and the plant, showing a loaded rear-dump truck on the haul road to the crusher and an empty truck returning to the shovel. The quarry, opening from the end of the cement mill, furnishes an almost ideal setup. The haul is only 300 feet.



• One of the dump trucks being loaded with 15 tons of limestone by a 2-cu.-yd. shovel. The height of the quarry face ranges from 50 to 90 feet.

• Below: One of the fast-moving rear-dump trucks loaded with 15 tons of limestone on its way to the crusher. Contemplated improvements at the quarry will bring the output to about 800,000 tons of crushed limestone annually.

• Right: A dump truck releasing its load into the primary crusher.

put of 500 tons per hour.

Other parts of the cement plant are already enlarged. Mills for grinding cement and slurry have been installed. Since the plant is located on an island, all the cement is shipped by water. Until now this shipment has been in paper bags, but the company plans to change over to bulk loading of ships to handle increased output. A new pier, along with a big new cement silo, is under construction. The height of the existing cement silo is 130 feet and the diameter is 65 feet. The new silo will contain 15,000 metric tons. The silos will be emptied by getting in small quantities of air to make the cement flow like water to a rubber belt which will transport it to the pier and onto the boat. Maximum loading capacity is scheduled at 500 metric tons an hour.

The plant ordinarily uses coal for burning the clinker, but nowadays all the kilns are oil fired because Sweden has great difficulty in getting coal. In one of the pictures can be seen the great oil tanks which the company has been forced to build.

First Carney Co. Sales Meet Features Demonstrations

Practical demonstrations and discussions of Carney products, including Golden Fleece batts, natural cement and masonry cement, highlighted the first sales conference held at Mankato, Minn., on September 26 by the Carney Company, Inc.

Among the speakers were Harry E. Carney Jr., president of the company, and N. A. Holmer, vice-president in charge of sales. In charge of demonstrations were C. E. Lovewell, sales manager of the cement division, and C. H. Carlson, sales manager of the insulation division.

War-Damaged Formosa Cement Plants Returning to Peacetime Production

THE Island of Formosa, which is located off the east China coast half-way between Shanghia and Hong Kong, has since the end of the war been the scene of intense activity. Every effort is being made to rehabilitate it industrially and agriculturally. The island is approximately 280 miles long and 70 miles wide, and promises to play an important part in the Chinese economy.

Formosa played an important, although comparatively bloodless, part in the 5-year war between Japan and the Western powers. It offered an ideal base for the Imperial Navy patrol ships, which more or less successfully blockaded the Chinese coast. When the Allies began their pincer movement on the island of Japan it was also a strategic point for the outfitting and respotting of troops.

As the British threatened Hong Kong, prisoners of war (mostly British and Australian) were evacuated to prison camps on the island, of which at least four were known to exist at Heito, Takao, Kirun and Taihoku. It is not known if any of these prisoners worked in the cement plant at Takao, or perhaps one of the others.

On V-J Day Formosa was liberated from Japanese rule after 50 years of occupation. During this period of occupation, the Japanese industrialized the island by constructing good communication lines, steel and cement plants, sugar refineries and plantations, and hydroelectric power plants. The island was designated to be the capital of the southern empire of Japan and, in case of an emergency, the capital was to be moved from Japan to Formosa.

Due to its large, highgrade deposits of limestone, its cheap power and local coal supply, the island of Formosa is ideally suited for the manufacture of portland cement at a very low cost. Two of the three plants, all operated by the Taiwan Cement Corp., are located close to good harbors and are capable of exporting cement to the South Pacific islands, and the mainland of China.

At present there are three cement plants on Formosa: (1) The Suo plant, located one mile from the town of Suo, with a harbor capable of taking up to 5000-ton vessels. This plant is located in the northeastern part of the island and is a dry-process operation with a capacity of 3800 barrels per day. This plant was started in 1941, completed in 1943, and has been in operation since that time. (2) The Takao plant, the largest of the three, is located in the southwestern part of the island in the city limits of Takao, and is capable of producing 8000 barrels per day. It is a dry-process plant with a good harbor taking ocean-going vessels. This plant was originally put into operation in 1917 and has been continually enlarged and modernized, producing portland cement since that time. (3) The Chikuto plant,

• A panoramic view of the Taiwan Cement Corporation's Takao plant on the island of Taiwan (Formosa).

which is located in the northwestern part of the island and uses the Lepol kiln process, is a new and very modern plant. It was not completed during the war but was put into operation early in July, 1946. The capacity of this plant is 2000 barrels per day, and it supplies the central part of the island with cement, including the dams to be built for hydro-electric power The railroad connecting this plant with Shinchiku was completed early in 1947.

The equipment found in the above three plants was manufactured by both U. S. and European firms, together with copies of such American and European equipment as the Japs themselves could manufacture. In connection with this work the German metric system of weights and measures used in the laboratories had to be changed. A.S.T.M. methods are now used.

The Suo and Chikuto plants were very heavily bombed during the war and were badly damaged but, due to the Takao plant being located next to a large mountain, all bombs aimed at that plant by U. S. bombers were deflected by air currents and landed on only one very small part of the plant during each bombing raid. As a result the destruction at Takao affected only one packhouse, a few elevators and screw conveyors, and one set of cement silos. The biggest damage done to the plant was due to neglect, and the inability to secure necessary repair and operating supplies which Japan would not furnish during the war.

The largest expenditures in putting these plants back into operation were in replacing the worn parts and furnishing operating supplies. General American Transportation Corp. was engaged by the National Resources Commission of China to furnish the necessary engineering skill, materials and equipment for the rehabilitation and

Dr. T. S. Hsu, President, Taiwan Cement Corporation

modernization of these plants in order to put them back into 100 percent operation. This program was started immediately after V-J Day and will be completed shortly after January 1, 1948. A. J. Anderson, formerly superintendent for Permanente was put in charge of the project by General American Transportation Corp. and spent nine months on the island in completing the engineering work for the rehabilitation, modernization and listing of all necessary operating supplies and repair parts. To date, all this work has been completed, the equipment has been shipped, and construction is now in process. Lew Bryant, well-known in the cement industry in the U.S.A., is operating superintendent of all three plants.

When the three plants are completed, China will have on the island of Formosa modern, complete and up-to-date cement plants which compare favorably with those in the United States. The advantages that the island of Formosa has over most other cement plants in the Orient are as follows: high grade limestone, clay next to limestone, silica sand available at plant site, cheap coal mined locally, low power rates due to hydro-electric power accessible on the island, transportation by both water and rail at majority of cement plant sites, and available trained personnel due to Japanese industrialization of the island. Taking the above into consideration, the outlook for cement manufacture for years to come on the island of Formosa is very bright and should go a long way to help China furnish the cement so urgently needed in the reconstruction of this torn country.

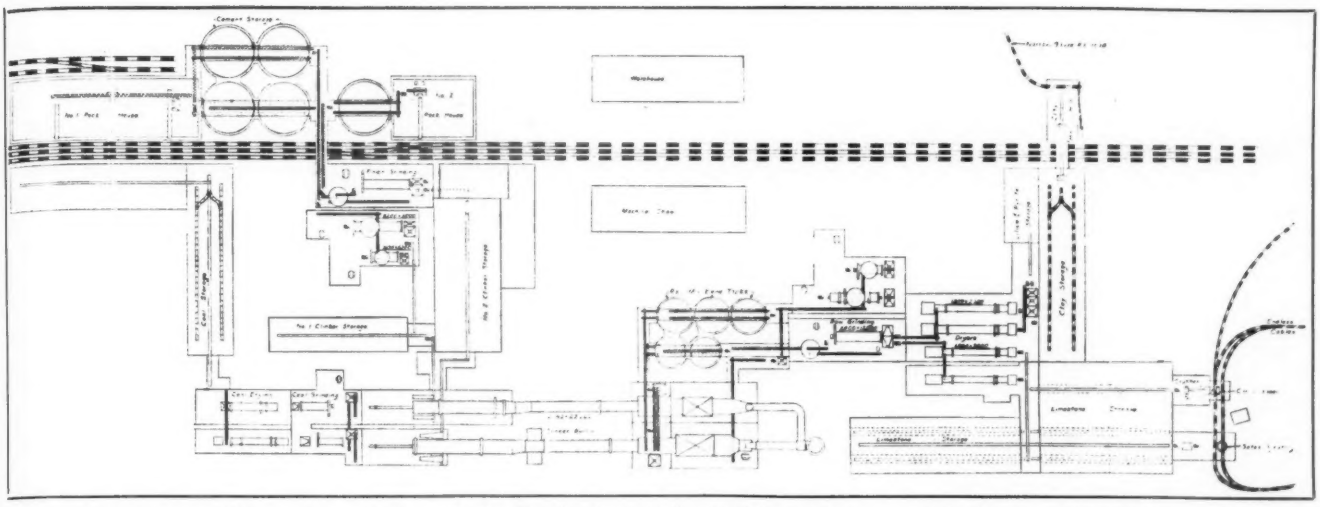
According to U. S. Government reports the output of cement on Formosa in May, 1946 was at the rate of 64,000 metric tons annually, and reached a rate of 120,000 tons annually in October. The highest annual output to date was in 1943 when 293,780 metric tons was produced by the Japanese. This figure is expected to be more than doubled when the present program of rehabilitation is completed. An output of 682,000 metric tons is said to be planned for 1948.

SUO PLANT

The Suo plant was badly damaged by bombers, and much new equipment had to be installed. In the quarry the jackhammers were supplemented by wagon and churn drills and a 1000-c.f.m. air compressor, and a coyote-hole method was developed. Hand loading and the 1-ton cars have been replaced by a No. 1201 Lima shovel with a 2½-cu. yd. Electric Steel Foundry dipper and 19-cu. yd. Mack diesel dump trucks. These now feed the existing No. 8½ Gates gyratory primary crusher. The 2.4-km. cableway has been provided with new cable and buckets and the 1.8-km. endless-cable railroad with 1-ton cars has been replaced by a 24-in. belt conveyor.

At the main plant the secondary crushing is done with a Japanese made hammer-mill with an elevator and belt conveyor to storage. This mill has been closed-circuited with a 2-deck vibrating screen to make a ¾-in. product. No change has been made in the drying department

• A model of the Takao facilities.

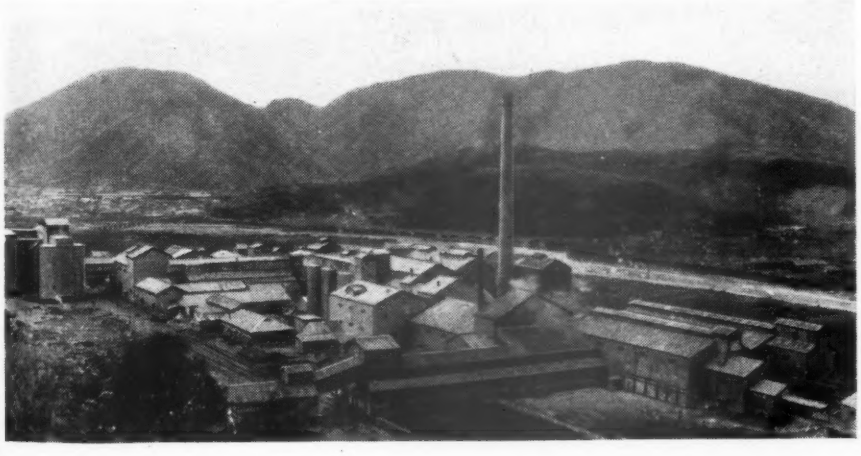


• A plan drawing of the facilities at Suo on the east coast of the island.

where the rotary driers are coal fired by a moving-grate stoker.

Clay was loaded by hand to cars which fed it to a hammer-mill. An International crawler tractor with a ½-cu. yd. bucket and a 24-in. belt conveyor are now used.

In the raw-grinding department the tube mills had been closed circuited with air separators by means of bucket elevators and screw conveyors. The latter have been replaced by a Fuller-Kinyon pumping system. A Norblo dust collector has also been installed on each mill.



• The Suo plant, seen from an elevation.

The two rotary kilns have Unax coolers and are connected to waste-heat boilers. The original low-silica brick has been replaced with 70-per-cent-alumina brick. The old drier and tube mill system of coal grinding has been replaced by a Raymond direct-firing bowl mill and a complete set of kiln control instruments has been installed.

The clinker is carried away from the coolers by Skipulters on which the original friction-type bearings have been replaced by roller bearings. Bucket elevators feed the clinker to Skipulters over the storage, but the Skipulters used to recover from storage have been replaced by 24-in. belt conveyors.

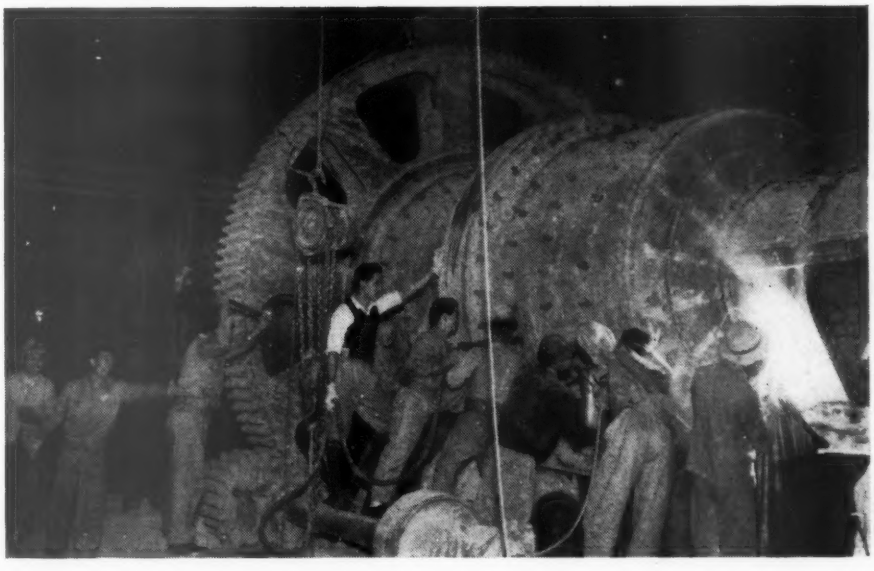
The clinker-grinding tube mills in this plant were connected to air separators by screw conveyors and bucket elevators, and these have been replaced by a Fuller Kinyon system. Individual Norblo dust collectors have been installed on each mill. Another Fuller-Kinyon system has replaced the conveyors and elevators which carried the finished cement to the storage silos and dust collectors have been installed on the silos. Two 4-tube St. Regis packers have been installed, one of them replacing an old 2-tube packer, and both are connected to dust collectors.

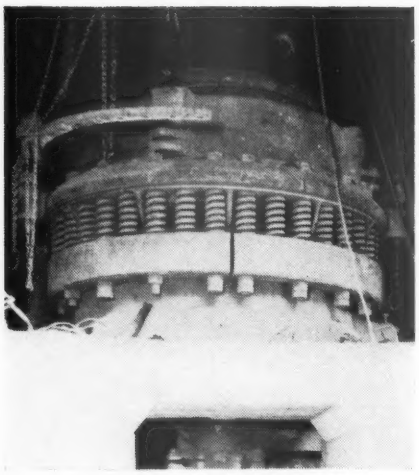
The laboratory was destroyed and had to be rebuilt and equipped with a complete set of chemicals and Boder Scientific Co. testing and control instruments. The office, machine shop, warehouse, and other buildings were also destroyed and had to be replaced. Considerable other equipment was destroyed and had to be replaced and near misses caused considerable damage to buildings and equipment.

TAKAO PLANT

As has been explained, the Takao plant is by far the largest of the three and was damaged little by air raids. Most of the work necessary in this plant was due to neglect and depreciation and the rehabilitation program involved the modernization of nearly every major department. At a later date this plant will be converted to the wet process and Wilfley slurry pumps will be used. In the quarry jackhammers have been supplemented with wagon and

• Here repairs are being made on a raw mill at the Suo plant.





• The cone crusher for clinker at Takao.

• Left: The firing end of the No. 3 kiln at the Takao plant.

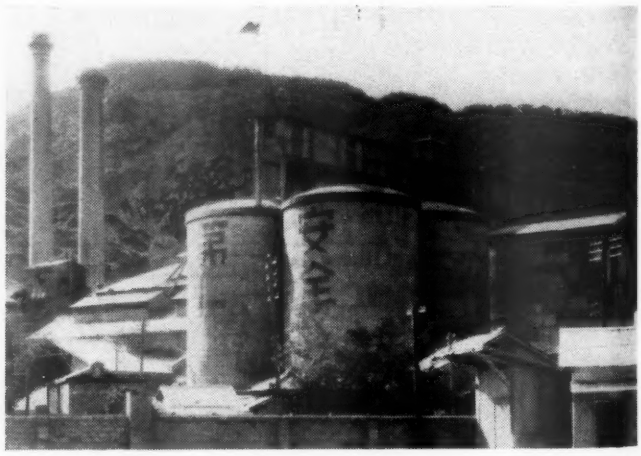
churn drills and the coyote-hole method has been adopted. Manual loading and hauling in 1-ton cars has been supplanted by a No. 1201 Lima shovel with a 2½-cu. yd. Electric Steel dipper and 19-cu. yd. Mack diesel dump trucks.

Manual loading of clay has been replaced by an International tractor with a ½-cu. yd. bucket. Hauling is done in 1-ton cars and there have been no changes made in the drying department, which includes rotary driers equipped with moving-grate stokers and dust collectors.

In the stone department the original secondary gyratory crusher has been replaced by a No. 5050 Dixie Mogul hammer-mill, which is in closed circuit with a 4 -by 10-ft., 2-deck vibrating screen to produce a ¾-in. material. No changes have been made in the stone-drying department, which includes rotary driers with moving-grate stokers. The tube mills are in closed circuit with air separators by means of bucket elevators.

Two of the three rotary kilns in this plant are followed by rotary coolers and the third has Unax coolers. Their low-silica refractories have been replaced with 70-percent-alumina brick. Both are connected to waste-heat boilers and Cottrell electrical precipitators to which some repairs had to be made. A complete set of kiln control instruments was installed. The rotary coal driers and tube mills were replaced by Raymond direct-firing bowl mills.

For handling the clinker to storage the reciprocating conveyors and bucket elevators serving the No. 1 and 2 kilns were replaced with drag chains and a 24-in. belt conveyor. On the Skipulter following the No. 3 kiln the friction bearings were replaced with roller bearings. For reclaiming clinker from storage the reciprocating conveyor was replaced by a 24-in. belt conveyor.

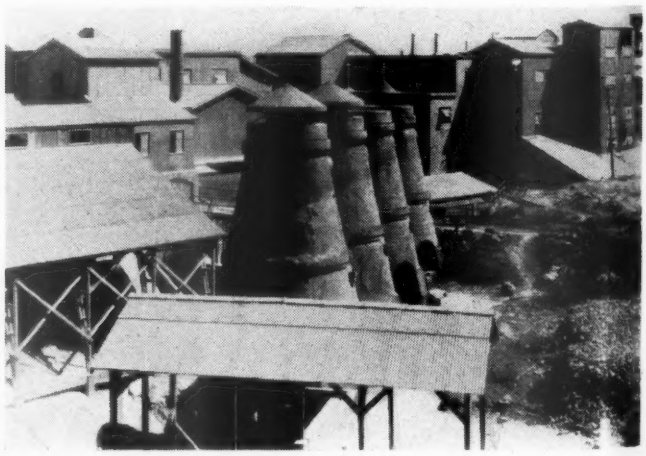


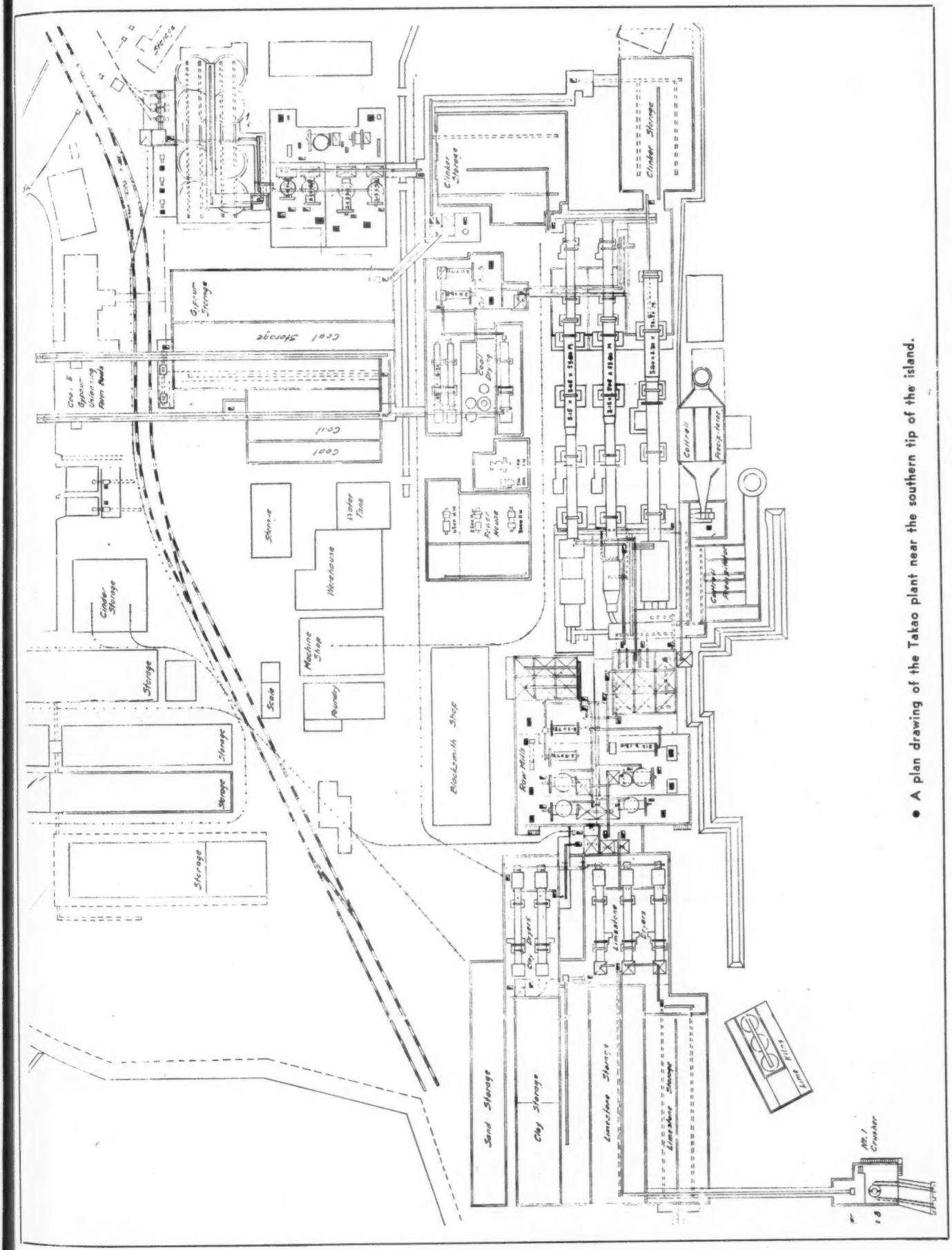
• Electrical precipitators at the Takao mill.

• Below: Women making paper bags at the Takao plant.

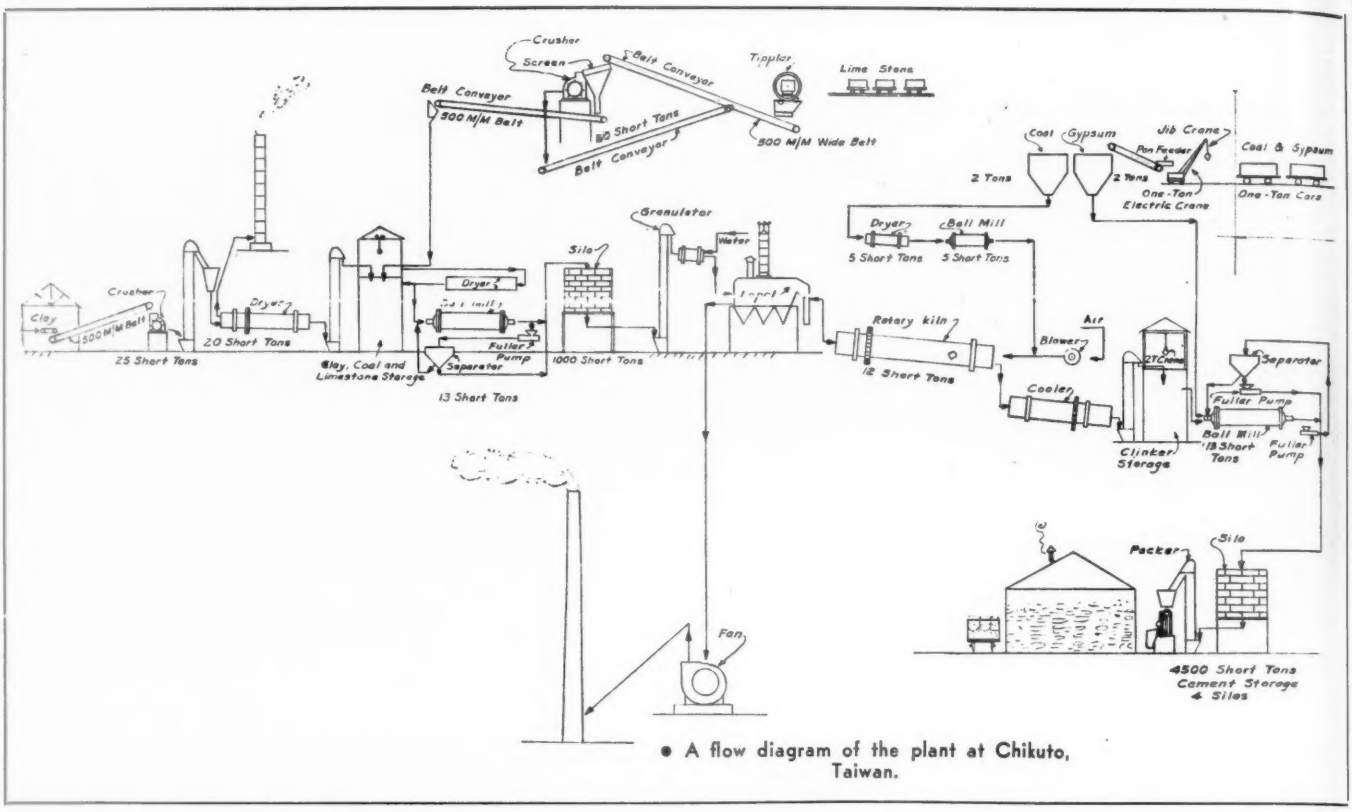
• Cement silos and stacks of the Takao plant.

• Below: Vertical type lime kilns at Takao.

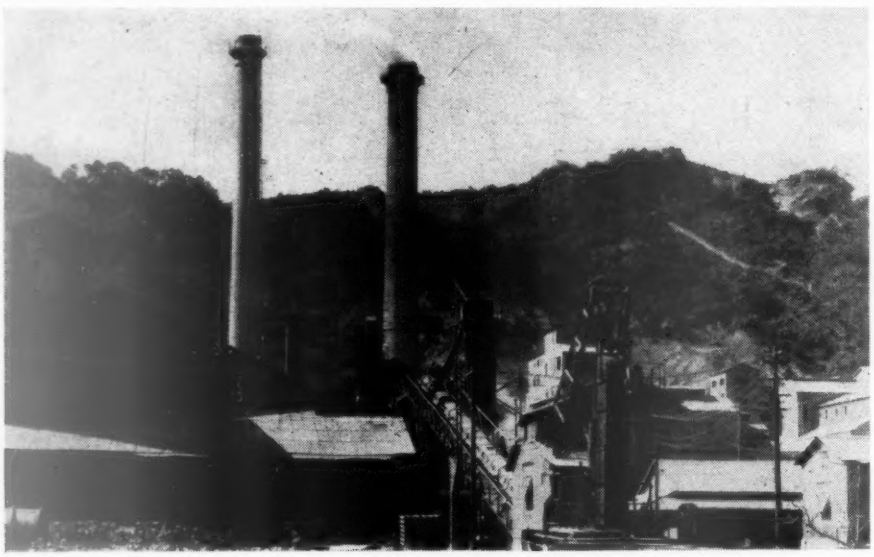




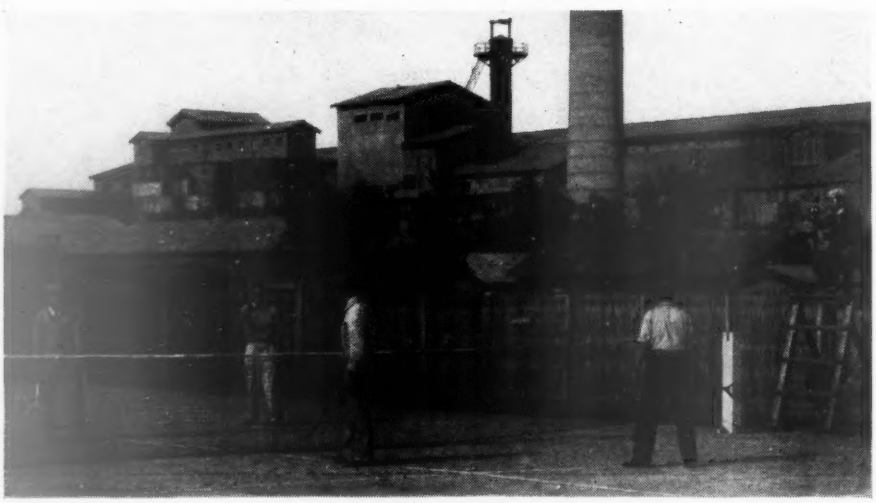
• A plan drawing of the Takao plant near the southern tip of the island.



• A flow diagram of the plant at Chikuto, Taiwan.



• The coal storage, conveyor and unloading facilities at Takao.



• Scene on the tennis court at the recreation ground of the Tsutung plant.

In the clinker-grinding department the screw conveyor and bucket elevators, which connected the mills in closed circuit with air separators, have been replaced by a Fuller-Kinyon system. Dust collectors were also installed. Another Fuller-Kinyon system replaced the screw conveyors and bucket elevators which carried the cement to the storage silos. Dust collectors have been installed on each of the two sets of silos.

As the No. 1 packhouse had been completely destroyed it was decided to enlarge the No. 2 packhouse. This was done by the installation of two additional 4-tube St. Regis packers; all four of these are now connected to dust collectors.

CHIKUTO PLANT

While the Chikuto plant began to produce cement for the first time in July, 1946, much of the needed equipment had not yet been obtained and much of the bomb damage had not been repaired. This job included the installation in the quarry of a wagon drill, a 1000-c.f.m. air compressor, and a No. 1201 Lima shovel with a 2½-cu. yd. Electric Steel Foundry dipper. Formerly hand loading had been practiced and the 1-ton, narrow-gauge cars had been pushed to the plant by hand. Now 19-cu. yd. trucks are being used.

Primary crushing is done with a No. 8½ Allis-Chalmers Gates gyratory. This stone is transported to

• Unloading American-made shovels at Keelung (Kilrun) harbor at the northern end of the island.

the plant by a ½-mi. cableway and 12 mi. of narrow-gage track over which 1-ton cars are pushed manually. Later this system will be replaced.

At the plant a rotary car dumper discharges the stone into the secondary crusher, a Japanese-made hammer-mill. A 4- by 10-ft. Link Belt 2-deck vibrating screen has been placed in closed circuit with the crusher to give a ¾-in. product. A rotary drier has been added which is equipped with a moving-grate stoker.

In the clay pit loading is done by hand into 1-ton cars, and these are pushed to storage. A pan feeder has been installed to the conveyor feeding the rotary drier.

The original raw tube mill was open circuit and this has been closed-circuited with an air separator, a Fuller-Kinyon pumping system, and bag-type dust collectors.

The Lepol rotary-and grate-type kiln was intact but the original cast-iron grates and chain have been replaced with 25-12 alloy. There were no kiln instruments and a complete set has been installed. No major change has been made in the coal-processing department where a rotary drier and tube mill are used. A rotary cooler discharges the clinker into a storage in which two overhead traveling cranes handle the raw materials and the clinker.

The clinker-grinding tube mill was open circuit and this has also been closed-circuited with an air separator, a Fuller-Kinyon pumping system, and bag-type dust collectors. A new set of reduction gears was installed on the mill. The St. Regis packers remain but they have been connected to a dust collector. The laboratory was seriously damaged and had to be equipped with a complete set of Boder Scientific Co. laboratory equipment and chemicals. Other buildings and much equipment was damaged by direct hits.

U. S. Potash Industry Sets New Production Records in 1946

New records were made in 1946 in the potash industry of the United States, both production of marketable potassium salts and sales reaching new highs, according to the U. S. Bureau of Mines. Production in 1946 was 1,687,735 short tons of potassium salts containing 931, 812 tons of equivalent potash (K_2O). This was an increase of 99,430 tons of potassium salts over 1945, and 57,569 tons of K_2O. The production of marketable potassium salts in the United States has increased each year since 1934. Sales (1,673,249 tons) were 76,089 tons greater in 1946, than in 1945 and contained 928,374 tons K_2O. The value of the sales in 1946 was over $32,000,000. The average value per ton of the potassium salts sold in 1946 was $19.23, slightly higher than that of 1945. Stocks of potassium salts in producers' hands at the end of 1946 were larger than in 1945. Exports of fertilizer potash materials continued to decline, whereas those for chemical uses were considerably larger.

The Western states production remains the dominant factor in the domestic potash industry. California, New Mexico and Utah furnished virtually all of the 1946 output, the larger part coming from the deeply-buried Permian saline sedimentary deposits of sylvite and langbeinite of the Carlsbad region of southeastern New Mexico. The Eastern states supplied only a small quantity—from well brines in Michigan and as a by-product of cement operations in Maryland.

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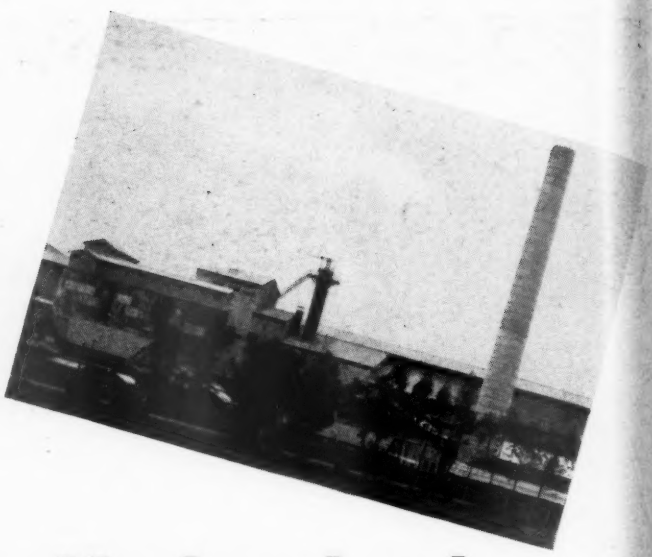

Cement Mills Modernized by General American

When the Island of Formosa was liberated the National Resources Commission of China engaged the General American Transportation Corporation to rehabilitate the cement plants of the island as quickly as possible. They were to furnish the necessary skill, materials and equipment to put the plants back into 100 per cent operation.

The program was started immediately after V-J day and will be completed shortly after January 1, 1948. When completed China will have complete and up-to-date cement plants which compare favorably with those in the United States.

This is an excellent example of General American's ability to coordinate its vast and extensive resources to carry through to completion any job, large or small.

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GATX GENERAL AMERICAN

Maule Industries' New Crushing Plant Can Ship by Canal, Rail or Highway

another ON THE SPOT report

ONE of the South's outstanding aggregates producing plants is Maule industries' brand new installation located just outside the western city limits of Miami, Florida. Designed primarily to relieve the al-

By WILLIAM M. AVERY

most chronic shortage of concrete materials in the Dade County area, the new plant in somewhat less than a year of operation has consistently exceeded its rated productive capacity of 400 cubic yards per hour of finished aggregates.

The 360-acre property on which the new plant is located is cut by the Tamiami Canal, and a spur channel has been dug to connect with the canal for handling barge shipments to the company's Miami Beach yard, and to customers as far south as Key West and north by way of the Interstate Waterways. The plant constitutes an important new link in Maule's network of concrete producing facilities which extends from Miami northward as far as Fort Lauderdale. Included are extensive facilities for marketing dry-batched aggregates, ready-mixed concrete, concrete masonry units and a wide range of special concrete products. Aggregates for a number of these allied operations are also produced by a floating crushing-and-screening plant located at Ojus, Florida, about 10 miles north of Miami.

Oölitic limerock, which is by a considerable margin the most plentiful aggregate material in the Miami area, is recovered at the new plant site from an underwater deposit ranging from 16 to 35 feet in depth. Overburden, averaging about 3 feet in depth and consisting largely of muck, is bulldozed from the deposit with a Caterpillar D-8 tractor. Most of the material requires drilling and blasting, although in some areas the formation lends itself to direct recovery by dragline.

• Left to right: R. G. Williams, production manager and one of the partners in Maule Industries; E. Paul Anderson, plant superintendent; F. C. Leffingwell, one of the owners of the adjacent Asphalt Materials Company, and E. B. Street, construction superintendent for Maule Industries.

• General view of Maule Industries' new crushing and screening plant at Miami, Florida. Ramp in the foreground is for trucks returning to the deposit after discharging at the primary crusher.

The blast holes are put down with an Ingersoll-Rand air-driven churn drill, and the charges, consisting of dynamite in egg-shaped plugs, are introduced through pipes which are then withdrawn from the holes.

Two P&H 3-cu.-yd. draglines are used to dig the material underwater and pile it in windrows adjacent to the working area. Two other machines, a Bucyrus 45-B and a Link-Belt K580, load from the windrows into trucks for haulage to the plant. Euclid bottom-dump trailer units, drawn by diesel-powered tractors,

• One of the four triple-deck 4- by 10-foot vibrating screens at the top of the tower.

• Left: View of the 36- by 48-inch single-roll primary crusher.

haul 16-cu.-yd. loads up a wide ramp from which the plant is fed. Their loads are discharged into a 25-cu.-yd. feed hopper at the top of the ramp, and the hopper in turn discharges onto a McLanahan and Stone roller grizzly feeder. The coarse material is fed to a 36- by 48-in. McLanahan and Stone single-roll Pioneer crusher, while the fines (up to 3-in.) drop directly onto a belt conveyor.

The crushing tower, a reinforced-concrete structure which rises some 70 feet above ground level, is fed from the primary crusher by a 36-inch inclined belt conveyor. This main conveyor has an incline of about 12 degrees and a length of about 370 feet, the relatively steep incline facilitating the runoff of excessive moisture present in the rock. The flow of material is divided and fed to two 4- by 10-foot triple deck Tyler-Niagara screens located at the top of the tower. Oversize from each of these upper screens passes through a 40-inch Cedar Rapids hammermill located directly below, and the product receives a final sizing on a battery of two 4- by 10-foot screens which are in turn located below the hammermills.

The various sizes of coarse aggregate can be stored in the bin compartments of the crushing tower, or they may be conveyed to open storage piles over either of two tunnel conveyors. In addition, there is a hexagonal reinforced-concrete bin for the storage of pea rock adjacent to the tower. This hexagonal bin, which has an effective capacity of about 200 cubic yards, serves also as the main support for the 36-inch conveyor from the primary crusher. Pea rock is fed to it from the crushing tower by means of a short inclined belt conveyor. All compartments of the storage bins have sufficient elevation so that the finished aggregates may be loaded by gravity either into trucks or railway cars, the latter being spotted on a two-rail siding running between the two concrete structures.

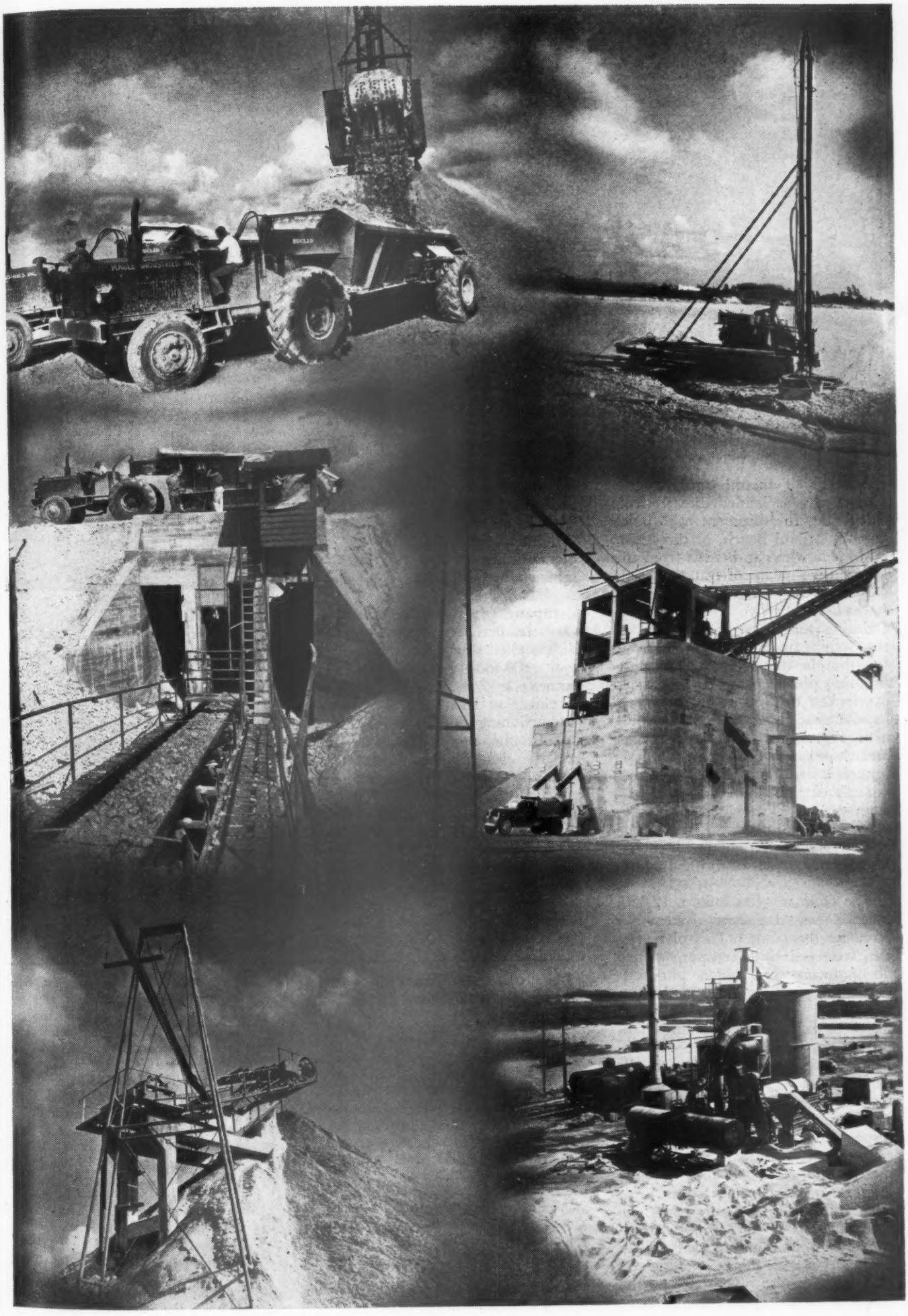
Unusually extensive facilities have been installed for the recovery of fines. At the crushing tower itself the principal recovery is made with an 8-foot Kennedy-Van Saun cone classifier and dewaterer. In addition there are five paddle-drag-type classifiers spotted around the tower. These units, which are built in Maule's own shops, are set on concrete piers about 40 feet above grade to provide the maximum storage capacity below them. Eight-inch pipes carry the flow of sand (suspended in water) by gravity from the tower to the various classifiers. The sand lines are supported by light steel cables suspended from welded-pipe A frames—a solution which proved to be not only practical and economical, but also highly photogenic. Water is supplied to the plant from a surface well by two 2,000 g.p.m. Fairbanks-Morse pumps. A third pump is available for standby.

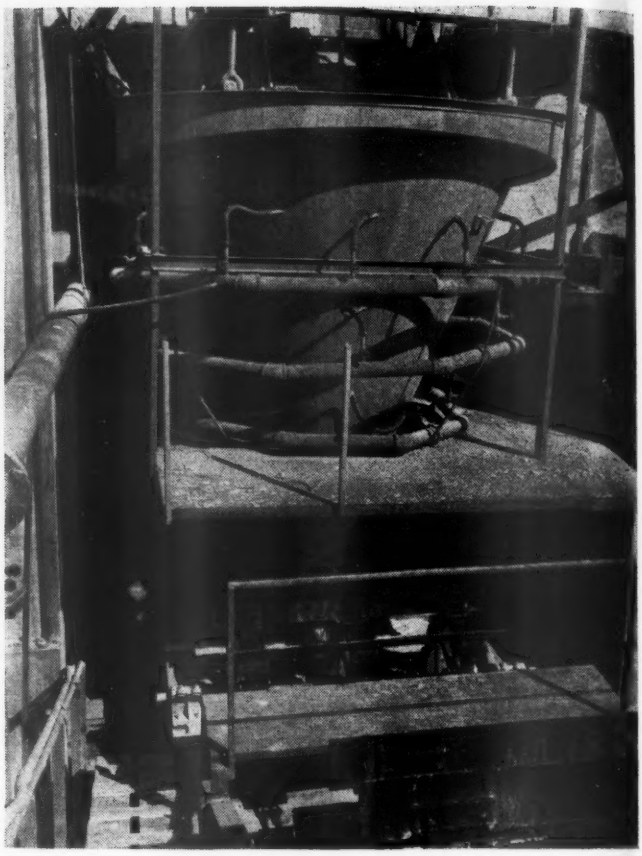
In all there are four tunnel conveyors on the property for reclaiming finished materials for various purposes. The longest of these (a 250-foot installation) feeds concrete rock and screenings into a 100-ton Heltzel bin equipped with a 4½-cu.-yd. Butler weigh batcher for charging transit-mix trucks. Cement for ready-mixed concrete operations is handled in a 600-barrel Erie bulk cement plant. Another tunnel 200 feet long is used to feed pea rock and screenings to a completely new and modern block plant which Maule has built on the property. The conveyor from the tunnel discharges directly into the aggregate bins above the block plant. The two Besser Super Vibrapac block machines in this plant have a combined capacity of 9,600 standard units per 8-hour day.

A spur canal has been dug from

• On the opposite page, top, left: Diesel-powered, bottom-dump trailers of 16-cu.-yd. capacity being loaded by one of the draglines. • Right: One of the air-driven churn drills in operation adjacent to the pond. Most of the deposit is below water level. • Center, left: Looking down the 26-in. conveyor toward the primary crushing station. The bottom-dump trucks discharge through a grizzly in the roadway over the crusher. • Right: A view of the crushing tower. The hexagonal concrete bin at the right provides storage space for 200 cubic yards of pea rock, in addition serves as the main support for the 36-in. conveyor.

• Bottom, left: Five paddle-drag-type classifiers, fed from the crushing tower by 8-in. pipe lines, provide additional capacity for the recovery of fines. • Right: This view of the adjacent asphalt plant shows, at the right, the discharge end of one of the several reclaiming tunnels which are among the outstanding features of the Maule plant.





• One of the two 40-inch hammermills in which oversize is reduced before final sizing.
• Right: Principal unit for the recovery of fines at the crushing tower is this 8-foot cone classifier and dewaterer.

the nearby Tamiami Canal so that barges may be loaded directly from stock piles for shipment to Maule's yard at Miami Beach, or directly to customers who can benefit from this inexpensive means of transportation. Materials for barge shipment are stockpiled over two 50-foot-long reclaiming tunnels at right angles to the spur canal. It seems safe to say that in the design of this outstanding plant no means have been overlooked to prevent having to rehandle materials. Gravity loading of trucks and cars directly from bins, and the extensive use of reclaiming tunnels for feeding adjacent consuming plants and for loading barges, seem to have provided for every reasonable contingency. In all there is live storage capacity for about 14,000 cubic yards of finished aggregates.

The company has built a 12,000-foot, 90-pound railway system for servicing the plant. This plant system is served by a company-owned diesel locomotive which plies between the plant proper and the two main-line railroad right-of-ways which form the western boundary of the property. These excellent rail facilities, in combination with the availability of the Tamiami Canal for water shipments, give the plant an unusually favorable position with respect to outlets. Under normal conditions it is anticipated that shipments will be divided about equally among cars, trucks and barges.

In addition to the company's own concrete block and ready-mixed-concrete operations carried on in conjunction with the new aggregates plant, Maule also rents space on the property for the operation of a large aggregate bituminizing plant. This is an S-75 Simplicity plant owned and operated by the Asphalt Material Company. It is set up about 100 yards from the crushing tower, and is supplied from two stockpiles over 100-foot-long tunnels. The tunnel conveyors discharge sand and specification rock directly into the proportioning hopper of the plant.

Both the new aggregates plant and the older plant at Ojus operate on a two-shift basis, giving the company a total output of 8,800 cubic yards of finished materials each operating day. Since less than half of this tremendous output is consumed in Maule's own extensive operations in the concrete field, the company is now in a position to offer substantial assistance in relieving the local shortage of aggregates. With the new block plant, and a similar plant at Ojus, operating on two shifts, Maule's annual output of concrete masonry units is expected to reach 16,000,000 equivalents. There is little doubt that this would constitute a new all-time high for the concrete masonry industry.

Ownership of Maule Industries is divided among four partners who also share top management responsibilities. C. B. King is general manager, R. G. Williams is production manager, M. F. Pafford is assistant general manager, and J. H. Gerken Jr. is manager of sales and service. The company was founded and for many years actively directed by the late Evert P. Maule.

1946 California Quarry Products Reach Highest Value Recorded

Statistics issued by the California Department of Natural Resources (Division of Mines) contain the following information on sand and gravel and crushed rock production during 1946 in California:

The sand and gravel output totaled 24,962,267 tons, valued at $16,305,222, as compared with 16,329,020 tons, worth $10,371,647, in 1945. Included in the 1946 figures are 72,226 tons of molding sand, worth $254,396, which came from a single property operating in Contra Costa, Los Angeles, Monterey, Orange, Sacramento, San Diego, San Mateo and Ventura counties. The 1946 output of molding sand showed an increase over that for 1945, which totaled 44,447 tons, valued at $155,567.

During 1946 the total production of crushed rock, rubble and rip rap was 16,647,945 tons (value, $11,366,566), of which 3,399,439 tons (value, $2,932,236) were reported used as macadam and ballast, 533,524 tons (value, $602,144) for rubble and rip rap, 1,175,854 tons (value, $993,628) in concrete, and 11,539,128 tons (value, $6,838,558) unclassified. The 1946 output showed an increase in both amount and value, as compared with that of 1945, which was 13,120,464 tons worth $9,835,704.

An agreement under which the city of Buffalo is purchasing 12½ acres of the LaSalle quarry on East Amherst St. in Buffalo for temporary storm water storage has been delivered to the Buffalo Crushed Stone Corp., owner of the property. The city is buying the quarry for $40,000.

THE LIME PLANT OPERATOR

By WOLF G. BAUER
Consulting Engineer

NATURE, CONTROL, AND INFLUENCE OF FLAMES IN LIME BURNING

Part IV. The Combustion Chamber

another P and Q exclusive

ALTHOUGH the subject matter in this series is particularly directed to lime kiln application, yet the lime plant operator should not fail to correlate these fundamentals with applications elsewhere in his plant, such as in heating of boilers, furnaces for driers, and air heating systems.

In the lime burning systems and their many arrangements, the combustion chamber may be an empty fire box, it may be a revolving or stationary furnace partly filled with limestone, or it may be a furnace completely filled with ore, such as vertical gas-fired or mixed-feed kilns, or cupolas. Sometimes also the combustion chamber or space can be said to include both firebox and kiln, as may be the case in semi-gas-producer firing with delayed or secondary combustion, which is being allowed to develop in the kiln proper.

Function of the Combustion Chamber Obviously, a combustion chamber is the more or less confined refractory-walled space into which fuel and air is introduced for the purpose of promoting ignition and flame development according to the requirements of the heat-absorbing process.

It would seem evident that the shape, size, and quality of flames generated in an empty combustion chamber apart from a kiln would be quite different from those developed in a furnace chamber containing limestone or ore under heat treatment. Whereas high flame temperatures and burning efficiencies are achieved by proper insulation, space design, pre-heated air, and thorough fuel and air mixing, etc., in the external empty firing chamber, such "efficient" conditions may not be tolerated in cases where the combustion chamber is also a part of the furnace or kiln containing the ore under treatment. Therefore, no matter

Wolf G. Bauer

whether the calcination system consists of an external-combustion kiln, an internal obstructed-combustion kiln, or an internal unobstructed-combustion furnace or kiln,—the combustion space or chamber, being part of the burner system, must develop, promote, and modify the flames and heated gases in order to effect maximum safe heat transfer at the required process temperatures.

Combustion Space Requirements Not only must the combustion chamber have sufficient volume to contain the flames of different fuels, but this volume space must be of suitable shape to avoid flame or fuel impingement, dead eddy corners, and to provide ignition surface and radiation as well as ample mixing and burning time for fuel and air.

Ratio of primary air and fuel, temperature of fuel and air, temperature of the chamber walls, and turbulency all influence the maximum quantity of heat that may be released in a given combustion space.

In general it may be said that the heat release with gas is widest, and although high heat releases are not especially applicable in present-day lime kilns, it may be of interest to note that 1,000,000 to 5,000,000 B.t.u./cu.ft./hr. have been released in special catalytic cup-type gas burners.

For solid fuel firing, hand-fired and mechanical overfeed stokers require more combustion space than necessary with the better mixing conditions of fuel and air in underfeed stokers. A safe figure of 8-12 cu. ft. of space for each square foot of fuel bed (grate) area may be used.

Combustion Chamber Space The shape of the combustion chamber is a function of the desired heat release, the type of fuel, and the desired characteristics of the hot gases leaving the combustion chamber to enter the furnace, drier, or kiln.

Gas can be readily burned in any type of space, but its combustion is least efficient in a long, straight, tunnel-type chamber. This also holds true for oil which, after all, is burned as a vapor or gas. For highest combustion and heat release efficiency, gas and oil flames are best made to spiral or reverse themselves several times to provide long flame travel and vigorous surface scrubbing.

For solid fuels, chambers are usually rectangular because grates can be constructed and supported, and fuel and air can be handled and distributed with greater east under those conditions. It should be kept in mind that the more cubical the chamber shape, and the larger the whole installation and firing rate, the

(*Continued on page* 102)

TABLE I

Heat Release—B.t.u./cu. ft./hr.

Oil	Furnace temp.	1700° F	18,000
		2000° F	30,000
		2600° F	75,000
		3000° F	150,000
		Special conditions	250,000
Coal	Excess air	10%	50%
Stoker firing grate pressure		.25″ 23,000	51,000
		.50″ 35,000	77,000
		1.00″ 53,000	100,000
Powdered coal firing		Normal operation	17,000 to 36,000
		Special conditions	50,000 to 100,000
Natural gas			18,000 to 250,000

N.I.S.A. Sessions Furnish Members With Pointers on All Phases of Industry

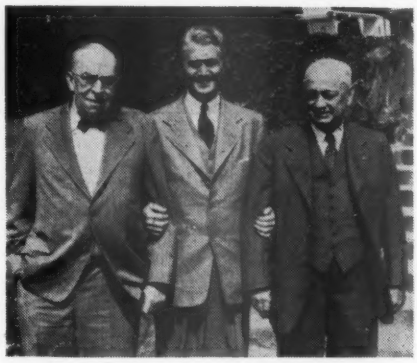
another ON THE SPOT report

THE semi-annual meeting of the National Industrial Sand Ass'n. at the Grove Park Inn, Asheville, N. C., October 1, 2, and 3, 1947 drew an excellent attendance of members and their wives. The varied

By WALTER E. TRAUFFER

and interesting program, and the entertainment, which of course included golf, made this meeting an important and enjoyable occasion. Preceding the main meeting was a meeting of the board of directors who decided, among other things, the dates of coming meetings. The 1948 annual meeting will be held at the Homestead, Hot Springs, Va., May 12, 13 and 14. The semi-annual meeting will be at The Greenbrier, White Sulphur Springs, W. Va., on October 20, 21, and 22.

Foundry Sand C. M. Hardy, chairman of the committee on foundry sands, presided at the opening meeting which was partly devoted to discussion of the "New Tentative Standards for Grading and Fineness of Sands" prepared by the American Foundrymen's Ass'n. R. E. Morey, metalurgist, Naval Research Laboratory, and chairman of the A.F.A. committee on grading and fineness, commented on some of the methods of testing which have been or are being used. Because he was not satisfied with any of them, said Mr. Morey, he developed the fast, simple and accurate Morey method in which sieve results are plotted as a cumulative curve instead of by percentages up to 200 mesh. This method makes it



• Left to right: John F. Putnam, National Silica Co.; George A. Thornton, Ottawa Silica Co.; Junius M. Strouss, Deckers Creek Sand Co.

easier to interpolate and to extend a curve, and makes a defective screen obvious.

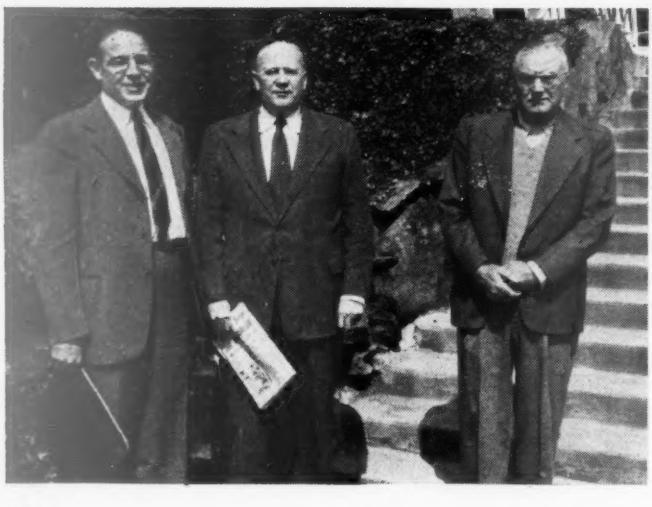
Mr. Morey also described a hydrometer method of determining density by micron sizes and gave the formula used in determining results. This method, he said, does in 10 minutes what other methods take hours to do, and it is fool proof.

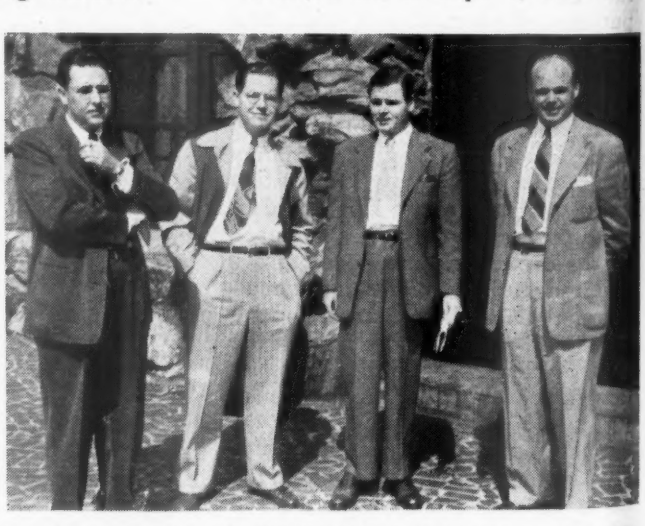
Stanton Walker, consulting engineer of the association, said that the Morey method upsets none of the present standards, such as the A.F.A. fineness numbers, and is an improvement over present methods. It is, he said, a big step toward simplification of testing methods.

Ground Sand Henry C. Thornton, chairman of the association's hygiene committee, presided at an open meeting of producers of ground sand. The discussion at this meeting was devoted principally to problems of dust control in connection with the bagging and bulk car loading of ground sand. C. H. Hartman, technical director, Bag Division, and R. P. Bushman, in charge of Machine and Engineering Division, St. Regis Paper Co., and W. C. L. Hemeon, head engineer, Industrial Hygiene Foundation of America, participated in this discussion. Among the subjects covered was the design of a new St. Regis packer to fit the special conditions found in this industry and the selection of a plant for the pilot installation. The effects of the sizes of spouts, speed of blades, number of spouts, automatic bin level control, etc., were discussed, with the elimination of dust as the main objective. A committee was appointed to discuss this problem and select a plant for the test installation.

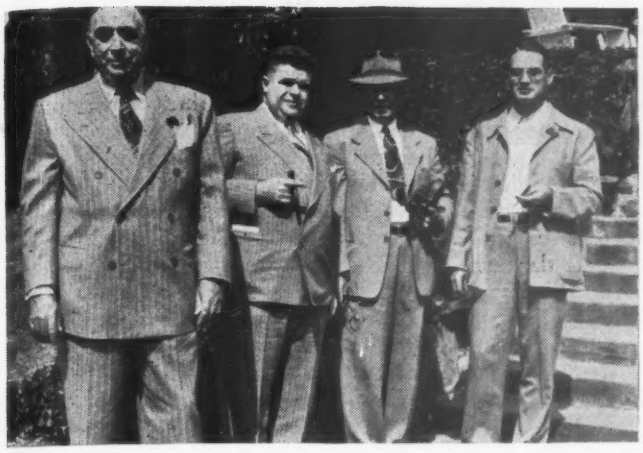
Freight Rates Sterling N. Farmer presided at the regular meeting which followed. Wm. W. Collin, a counsel for the association in connection with freight rates, gave a brief resume of the manner in which the railroads last year got a moderate rate increase. This year, he said, the railroads in July asked for an increase of 20 percent with a maximum of 40 cents per ton, and followed this on Sept. 5, with a re-

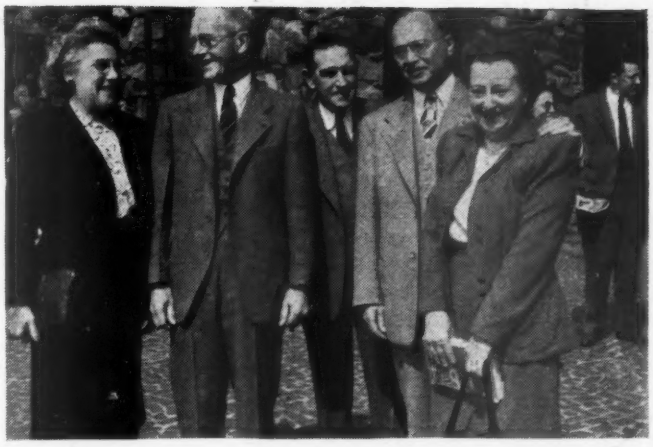
• Left to right: Charles A. Horsky; E. O. Schneider, Ottawa Silica Co.; Stanton Walker, consulting engineer, National Industrial Sand Association.

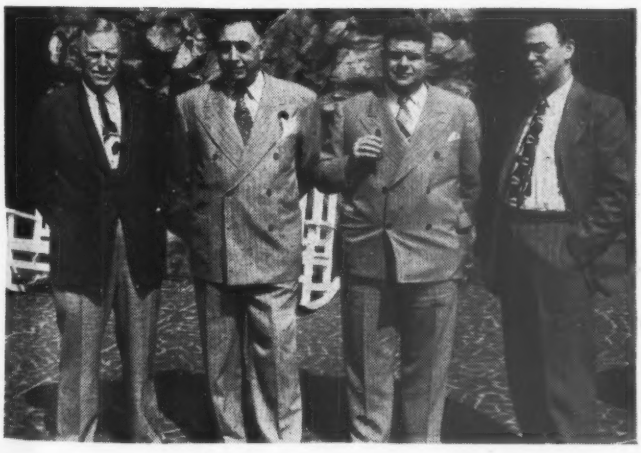


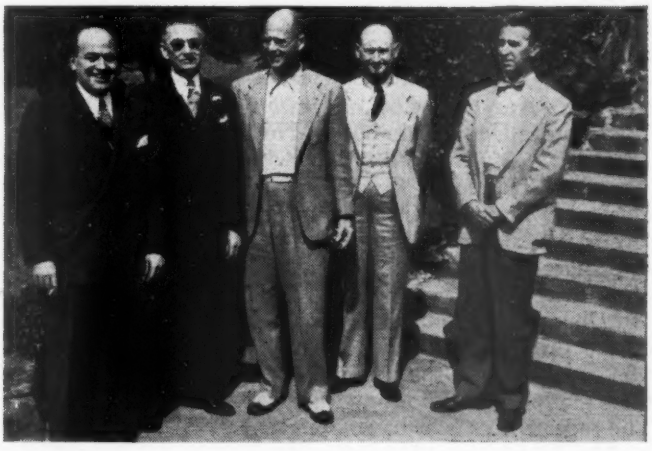


• Left to right: S. E. Doster, Standard Sand Co.; Robert W. Muhlitner, Great Lakes Foundry Sand Co.; J. S. Coxey Jr., Industrial Silica Corp.; R. Cronenweth, Great Lakes Foundry Sand Co.









• Top row, left: C. M. Hardy, Hougland and Hardy; Lyle T. Manley, Manley Sand Co.; C. R. Wolf, National Pulverizing Co.; E. C. Sawyer, Ayers Mineral Co. • Right: Mrs. Russell G. Hay; William V. Collin Jr.; A. Y. Gregory, president, National Industrial Sand Association; Mr. and Mrs. A. Warsaw, Wedron Silica Co.

•Center row, left: C. R. Wolf, National Pulverizing Co., and A. Warsaw, Wedron Silica Co. • Middle: Mr. and Mrs. Russell G. Hay, Ayers Mineral Co. • Right: Vincent P. Ahearn, secretary, National Industrial Sand Association and R. E. Morey, Naval Research Laboratory, Washington, D. C.

• Bottom row, left: Russell G. Hay, Ayers Mineral Co.; C. M. Hardy, Hougland and Hardy; Lyle T. Manley, Manley Sand Co. • Right: Arthur B. Schlesinger, New Jersey Pulverizing Co.; Alfred J. Miller, Whitehead Brothers Co.; Emory M. Durstine, Keener Sand & Clay Co.; Henry C. Thornton, Ottawa Silica Co.; W. C. L. Hemeon, Industrial Hygiene Foundation.

quest for 38 percent in official, and 28 percent in southern and western territories, with 30 to 60 cent limits per ton. A 10 percent interim increase was receiving separate consideration.

According to Mr. Collin the average overall paid by this industry so far this year was $2.15, an increase of 15 cents over last year. These increased rates, he said, seem to have cut down the average length of haul, but no concrete evidence is yet available. If granted, the rate for industrial sand will be 30 percent higher than that for ordinary sand.

Scholarships John M. Price, campaign chairman, Foundry Educational Foundation, told the members of the program which the A.F.A. has begun to establish scholarships in various colleges so that the industry might be able to obtain the services of college-trained technicians to help solve many of its problems. Six colleges, he said, have already started the required courses and others are expected to follow suit. The plan is to start with 40 to 50 graduates annually on scholarships and to reduce that number as the courses become more popular. He asked that individual producers of industrial sand help this plan along with contributions as it is also vital to them.

New Jersey Code Theodore C. Waters, counsel for the association, was unable to attend the meeting but his report on workmen's compensation insurance matters was read by Vincent P. Ahearn, secretary of the association. He first reviewed the progress made to date with the New Jersey Industrial Hygiene Code. A tentative code was published and circulated by the Dept. of Labor on Nov. 15, 1945. After consultation with Theodore Hatch of the Industrial Hygiene Foundation, Pittsburgh, several amendments were proposed to protect the interests of the association members. On August 1, 1947 the Department published a redraft of the proposed code but examination showed that the recommendations made were not adopted in full. The redraft is now to be resubmitted to Mr. Hatch for his further criticism and comment after which he and Mr. Ahearn will confer with the official in charge of the revision of the code.

Workmen's Compensation As authorized at the last meeting Mr. Waters compiled the data relating to the experience of New Jersey producers under the New Jersey Silicosis Compensation Law, the association's membership comprising all the producers in that state in Classification 1741 (silica grinders). It was found that there have been no claims for silicosis compensation against any of these companies since the Silicosis Amendment to the Compensation Act became effective January 1, 1945. However, since that date the following rates per $100 of payroll have been added to the base workmen's compensation rate for occupational disease coverage.

Year	Per $100 of Payroll
1945	$2.45
1946	3.20
1947	2.88

Mr. Hatch then personally submitted this experience data to the proper state officials and the matter is now pending consideration by the Compensation Rating and Insurance Bureau. He believes that, as a result, a substantial reduction will be made in the rate for 1948.

Legislation At the earlier meeting this year Mr. Hatch submitted a report on legislative developments during the year and a brief analysis of the occupational disease laws enacted. One of the most important developments, he said, was the legislative amendments in New York State where the so-called Escalator Clause for monetary liability was eliminated, and claimants totally disabled from silicosis or asbestosis received the full benefits of the law for permanent total disability or death.

The year 1948, said Mr. Hatch, will be an off year for legislative sessions, but he and Mr. Ahearn will follow closely any developments along these lines and keep members informed of them. He also told of attending a meeting of the American Conference of Governmental Industrial Hygienists where a committee was appointed to draft a proposed uniform code with recommendations for all states to enact same. A formal draft of the proposed code will be submitted at the next meeting of the Conference.

General George A. Thornton presided at the final meeting which was devoted to discussions of a variety of subjects. Mr. Walker said that the foundry sand committee has been active, having established policy and formed two technical committees, as well as working with the A.F.A. on the Handbook and other matters. The abrasive blasting committee has considered the draft for a manual and the finished draft will be ready in time for the annual meeting.

A. Warsaw, chairman of the committee on revision of the constitution and by-laws, said that copies of the committee's report had been submitted by mail to all members and all changes were adopted.

Charles A. Horsky addressed the membership on the question of the Taft-Hartley Law, which he said was the latest step in a 15-year series of labor legislation since passage of the Railway Labor Act in 1925, which first recognized the principle of collective bargaining. He gave a brief but complete resume of the various intermediate steps and pointed out that the new law does not repeal the Norris-LaGuardia Act.

The Lime Plant Operator

(*From page 99*)

lower the radiation and heat losses per fuel burned.

The pulverized coal combustion chamber is often square in cross-section, and may be twice as high as wide. This shape depends on the burner location and the type of coal. Under conditions where burners fire less than 1 ton of coal per hour, about five feet of clear combustion path must be provided as a minimum. If heat release is high and ash fusion is low, care must be exercised to allow ample free path and some cooling of molten ash, so that these fused particles chill and harden before striking refractory walls. In cases of coal with considerable ash of low melting point, it is best to install the burner such that the flame is directed vertically down against a hot bottom and where at least half of the ash can be removed in a molten state by tapping. In any case, the length is a function of the fineness of grind, the type of ash, and the characteristics of flame or products of combustion desired.

Combustion Space in Lime Kilns When the combustion chamber is part of the kiln or furnace, maximum or optimum heat release is not necessarily the most desirable from a processing or calcining standpoint. A 9- by 175-ft. rotary kiln has an active free cross-section of about 45 square feet, and may burn 45 million B.t.u. per hour. In a rotary lime kiln of this size, combustion may not be complete for all practical purposes until the gases have reached the middle of the kiln. Thus

$$\frac{45{,}000{,}000}{45 \times 87} = 11{,}500 \text{ B.t.u./c.f./hr.}$$

Comparing this with heat release rates given in Table 1, it is at once apparent that it is heat-abstraction capacity rather than combustion space which sets the limits of kiln output. It also shows that, in a cement or dolomite rotary kiln, turbulency combined with preheated secondary air, can readily produce nearly complete combustion in about 15 to 20 feet of kiln length. The largest coal particles will be consumed in ½ second. An average fuel stream velocity of 40-ft. sec. can be assigned to this distance when the burner tip velocity is 100-ft. sec. This would result in a flame length of 20 feet as a check. Comparing such a flame length with one generated in boiler practice at the same output rate, we find it to be from two to three times as long. More extreme turbulency, achieved by bringing all secondary air immediately around the burner tip in a rotary motion, results in this difference between kiln and boiler burners.

Combustion space in a gas-fired or mixed-feed vertical shaft kiln is considerably less. In a kiln using 4-inch diameter average stone size, the calcining zone may be from 10- to 20-ft. high, depending on the kiln capacity and draft. Assuming a fuel supply rate of 5 million B.t.u. per square foot shaft cross-sectional area, and a void-space content of 50 percent, a 15-ft. high combustion zone would result in the astonishingly high heat release of $\frac{5{,}000{,}000 \times 0.5}{15}$ = 167,000 B.t.u./cu.ft./hr. In a shaft kiln on natural draft, heat release would be about 40,000 B.t.u. Gas fuel, extreme turbulency, air and fuel pre-heat, and some possible catalytic surface combustion all contribute to these rather high rates. With natural gas it is therefore quite possible to reach and surpass a heat release of 200,000 B.t.u./cu.ft./hr. in high capacity vertical gas kilns.

It goes without saying that such B.t.u. generation is fraught with many dangers to calcination temperature control, especially when large capacity small-stone vertical calciners are designed as obstructed-combustion chambers, rather than convection calciners in which controlled combustion is performed in separate chambers.

(To be continued)

The Canadian Gypsum Company, Ltd., 160 Bloor Street, West, Toronto, Ont., Canada, has announced plans to erect a radial chimney 120 feet high and 8 feet in diameter at its plant in the Toronto suburb of Weston.

PERSONAL MENTION

Several changes in the personnel of the Lehigh Portland Cement Company have been announced.

HENRY A. JOHNSON has retired as plant manager of the plant at Fordwick, Va., a position he has held since 1918. He first went to Fordwick in 1907 as timekeeper for a construction company rebuilding the powerhouse. The plant was then owned by the Virginia Portland Cement Company. On completion of the construction work, he was employed by the cement company until 1915. At that time, he accepted a position with the Atlas Portland Cement Company at Northampton, Pa. In the meantime, the Fordwick plant had been purchased by Lehigh, and Mr. Johnson returned to Fordwick in 1918 as superintendent.

HARRY A. ZELIFF will succeed Mr. Johnson as plant manager at Fordwick. Mr. Zeliff became field man in the chemical department after a period in Lehigh's research laboratory and gained a wide experience by working in several plants. In 1943, he became chemist at Birmingham, where he was later promoted to assistant superintendent and supervising chemist. For the past year, he has been assistant plant manager at Fordwick.

E. S. GUBERNATOR has retired as general traffic manager. Mr. Gubernator has represented the company in various rate cases before the Interstate Commerce Commission and played a large part in establishing the basic pattern of the rates on which cement is now shipped in the greater part of the country. His service with Lehigh covered 32 years. He was traffic manager of the Iola Portland Cement Co., Iola, Kan., when that company was purchased by Lehigh. He became successively assistant traffic manager and traffic manager in Chicago and was transferred to Allentown in 1926.

JOHN J. CLOUS has been named traffic manager for Lehigh, to succeed E. S. Gubernator. Mr. Clous has been assistant traffic manager at Allentown for the last ten years.

LEE PURTILL has accepted an appointment as superintendent of the quarry and plants of the Granite Rock Company, Watsonville, Calif. He has been connected with the firm since 1924 and was co-designer of the outstanding electrical control systems installed in the crushing and screening plants built by the company.

The election of JOHN C. BOWEN as executive vice-president of the Lehigh Portland Cement Company of Allentown, Pa., has been announced by the company.

C. GLENN BROWNING and CHESTER S. CRAWFORD were also named to new posts on the staff of Lehigh.

Mr. Browning, formerly Eastern sales manager, was elected vice-president and general sales manager; and Mr. Crawford, who has been assistant vice-president, was named vice-president and assistant general sales manager. The announcement of the appointments was made by B. L. Swett, vice-president.

KENNETH E. TROMBLEY has been made editor of the *News*, official publication of the Calcium Chloride Association. He succeeds DON ABBOTT, who resigned to join the public relations staff of the Great Lakes Steel Corporation.

PAUL J. KREMER, controller and assistant treasurer of the Buffalo Slag Company, Inc., Buffalo, N. Y., has been elected to membership in the Controllers Institute of America.

The institute is a technical and professional organization of controllers devoted to the improvement of controllership procedures.

OBITUARIES

ARTHUR J. WELLINGTON, founder and treasurer of the Massachusetts Broken Stone Co., died at his home in Weston, Mass., on Sept. 19. He was a direct descendant of Col. Jeduthan Wellington, who fought in the Battle of Bunker Hill. He founded in 1890 the company in which he remained active until his death. Mr. Wellington was 87 years old.

DAVID E. WASHBURN, chief chemist for the Bellefonte Division of the Warner Company of Philadelphia, Pa., died on September 20 after a heart seizure.

Mr. Washburn was chief chemist for the American Lime & Stone Company in April, 1922, and went with that firm when it became the Warner Company's Bellefonte Division. He was 64 years of age.

JAMES R. HERRON, 76 years of age, who was formerly the owner and manager of the Independent Cement Works at Atlanta, Ga., died on September 11 after a brief illness. He retired from business 15 years ago.

J. A. MARTIN, a co-founder of the Austin White Lime Company of Austin, Tex., died recently at the age of 80 years.

ROGER E. VERNIA, 62, former president of the Hoosier Lime Co. at Salem, Ind., was found dead at his home in New Albany, Ind., on October 26. His death was attributed to a cerebral hemorrhage.

JOHN G. LIND, who was formerly general manager of St. Marys Cement Company, Ltd., at St. Marys, Ont., Canada, died recently in that city.

JOHN A. SAME, former owner of the Same Gravel Company, died on September 18 at a hospital in Jeffersonville, Ind. He was 78 years of age.

New Electro-Alloys Foundry Seen At American Brake Shoe Preview

The Electro-Alloys Division of the American Brake Shoe Company played host on October 16 to some 50 representatives of the technical press, who came from all sections of the country for a sort of "sneak preview" of the company's new $3,000,000 high-alloy foundry at Elyria, Ohio. The result of years of research by Brake Shoe engineers and metallurgists, the new foundry combines the finest equipment layout and casting methods known to the high-alloy casting industry.

Ground was broken for the new Elyria plant in September, 1945, and construction was completed in July, 1947. The plant has over 150,000 square feet of floor space. This includes a two-story office building; a two-story welfare building with lunch and washrooms; a fully-equipped dispensary, pattern shop and storage building; a building housing the heating plant; a machine shop building; and the foundry itself, which measures 460 by 280 feet. All construction is of steel and brick with generous use of glass block throughout. The roof is monitor type covered with precast concrete slabs.

Particularly striking features of the foundry building, apart from the great size of the foundry floor, are the even diffusion of light to all parts of the building, and the tunnels, pipes and conveyor systems for sand handling and dust collecting equipment beneath the foundry floor. To state that the new Electro-Alloys foundry at Elyria is modern and complete would simply imply to a user of castings that the company has a new "house" with more room. But this new plant means far more than this to industrial buyers.

The plant has been designed and built to provide conditions under which workers can devote their full production skill to the job. Visitors have described it as a foundryman's dream. Clean, light and airy, it is equipped with the best means of material handling to eliminate back-breaking labor.

Mechanization is as nearly complete as practicable in an alloy foundry producing miscellaneous sizes and shapes of castings. Sand-conditioning equipment is located in the center of the foundry. Conditioned sand moves overhead on a continuous belt conveyor delivering to hoppers at 18 molding stations along the route to each end of the building. After the mechanical shakeout, the sand moves underground back to an elevator which carries it up to the conditioner again.

Equipment located in the molding department includes jolt rockover molding machines, jolt squeeze strip molding machines, jolt squeeze molding machines for snap molds, floor jolt molding machines and a sandslinger in the center of the foundry which is available for larger castings. Gravity roller-type conveyors are conveniently located to take molds away from molding machines.

Equipment in the core room includes bench jolt machines, core blowers, floor jolt machines for large cores and a sand conditioning unit separate from that for the molding department. Rack type ovens and a car type oven all electronically controlled handle core baking. Large cores are handled directly from the core department to the mold set-up floors.

The most efficient possible ventilation has been provided in the plant. Dust-laden air is removed by hoods over and under each shakeout, and delivered to five hydroclones where the air is thoroughly washed and returned to the shop. The sludge is deposited in two floor tanks from which it is removed regularly. Nine power ventilators in the monitor roof remove smoke and gases from the melting furnaces and from the pouring floor. With this equipment, a complete change of air is effected every six minutes.

Three electric induction melting furnaces and three top charge, hydraulically controlled electric arc melting furnaces are located in the center of the foundry. These six furnaces supply metal to any point in the foundry with minimum travel. With such a flexible furnace department, there is no delay in the production of either small or large special analysis castings. Close chemical analysis control as well as melting flexibility were the primary considerations in the choice of equipment and layout of the melting department.

Necessary heat treating, from stress relieving at low temperatures to quench annealing of Chemalloy stainless castings at 2200 degrees F., is handled in two electronically controlled furnaces. One is a large car type and the other is a medium size batch type furnace. A quench tank at floor level is located between the two furnaces. All heat treat operations are under the supervision of the plant metallurgical department. Heat treat cycles for individual heats are established by treatment in the plant physical laboratory.

The finishing department has been carefully laid out in such a way that castings move on practically a production line schedule from the rough inspection and chipping, through to grinding and tumbling, rough sand blast and preliminary inspection, X-ray rooms, welding and heat treating, finish sand blast, Zy-Glo test and finally on to physical testing and inspection. Grinding is done in specially constructed booths.

Brake Shoe Companys alloy production was formerly divided between the old Electro-Alloys plant in Elyria and the alloy department of the American Manganese Steel Division's plant in Chicago, which has been making alloy castings since 1925. All Brake Shoe alloy production will now be concentrated at Elyria. When in full production this foundry will double the previous heat- and corrosion-resistant alloy production.

Founded in 1902, American Brake Shoe Company, with its ten divisions and four foreign subsidiaries, operates a total of 60 plants, over 40 of which are foundries. The company is a member of 42 communities located in 21 different states, Canada and France.

Since the war American Brake Shoe has been able to undertake an extensive program of plant modernization and construction. Besides the new Elyria plant, Brake Shoe has built new plants in the cities of Niles, Ohio; Meadville and Meadow Lands, Pennsylvania; Winchester, Virginia, and Lindsay, Ontario.

• Left: The Electro-Alloys melting department. The three electric furnaces are used in melting Thermalloy, a heat- and abrasion-resistant alloy.

• Below: A view of the molding floor, showing a rack-type oven (foreground) used in baking small cores. A sandslinger is seen in the right background.

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FLORIDA—JACKSONVILLE: Clark Equipment Inc., 1839 Main St.

GEORGIA—ATLANTA: (COLLEGE PARK) Carley Trailer & Equipment Co.

IDAHO—TWIN FALLS: Twin Falls Equipment Co., 251 Main Ave., W.

ILLINOIS—CHICAGO: Voltz Bros., Inc., 2520 Indiana Ave. PEORIA: A. W. Moore, 2710 S. Adams St.

INDIANA—EVANSVILLE: Hercules Body Co., Inc. FORT WAYNE: Peerless Manufacturing Co., 4227 Bluffton Rd. INDIANAPOLIS: John Guedelhoefer Wagon Co., Inc., Kentucky Ave., at Georgia Ave.

IOWA—BETTENDORF: Standard Wholesale Co., 1525 State St. CEDAR RAPIDS: E. Cohn & Sons, Inc. ALBIA: Shelquist Truck Equipment Co.

KENTUCKY—LOUISVILLE: H. Edinger and Son, 1010 Story Ave.

LOUISIANA—NEW ORLEANS: Magnolia Equipment & Security Corp., 900 Jefferson Hwy. SHREVEPORT: Dealers Truck Equipment Co., Inc., 1561 Texas Ave.

MARYLAND—BALTIMORE: Fallsway Spring & Equipment Co., Fallsway at Lexington St.

MASSACHUSETTS—BOSTON: (CAMBRIDGE) Hercules-Campbell Body Co., 130 Brookline St.

MICHIGAN—DETROIT: Waggy-Hoffman Equipment Co., 14089 Schaefer Hwy. (CHICAGO, ILL.) Stahmer Supply Co., 135 S. LaSalle St.

MINNESOTA—ST. PAUL: General Truck & Equipment Co., 2535 University Ave.

MISSOURI—KANSAS CITY: American Body & Equipment Co., 1411 Charlotte St. ST. LOUIS: Truck Equipment Co., 511 N. Channing Ave.

MONTANA—BILLINGS: Western Construction Equip. Co., 505 N. 24th St. MISSOULA: Western Construction Equip. Co., 218 W. Pine St.

NEBRASKA—LINCOLN: Highway Equip. & Supply Co., 21st & N Sts. SCOTTSBLUFF: Colorado Builders Supply Co., 602 W. 27th St.

NEW MEXICO—ALBUQUERQUE: The Harry Cornelius Co., 1510 N. Second St.

NEW YORK—BUFFALO: Truckstell-Wilcox, Inc., 224 W. Utica St. TARRYTOWN: Hercules-Campbell Body Co., Inc. WATERLOO: Hercules-Campbell Body Co.

NORTH CAROLINA—RALEIGH: J. B. Hunt & Sons, 323-25 W. Martin St. SPRUCE PINE: Mitchell Distributing Co.

OHIO—CANTON: Ewing Brothers, 929-41 Cleveland Ave., N. W. CINCINNATI: The Bode-Finn Company, 2650 Spring Grove Ave. CLEVELAND: The Trailmobile Company, 1808 E. 22nd St. COLUMBUS: Hercules Body Sales Co., 580 Hamlet St. UHRICHSVILLE: Wells Body Co., 112-20 Lake St. YOUNGSTOWN: O'Dea Truck Body Sales, 2035 Ohio Ave.

OKLAHOMA—LAWTON: Tompkins Auto Salvage Co., 917 S. Second St. OKLAHOMA CITY: The Diesel Power Co., 1801 N. E. Ninth St. TULSA: The Diesel Power Co., 4th & Elgin Sts.

OREGON—PORTLAND: Newell Truck Equipment Co., 316 N. Russell St.

PENNSYLVANIA—ALTOONA: Brumbaugh Body Co., 100 Plank Road. ERIE: The Trailmobile Co., 1223 Walnut St. LEBANON: M. A. Brightbill Body Works, E. Cumberland St. at 7th Ave. PHILADELPHIA: Eastern Body Co., 21st & Fletcher Sts. PITTSBURGH: Hercules-Pittsburgh Body Co., 1717 Mary St., S. S.

SOUTH CAROLINA—COLUMBIA: South Carolina Equipment Co., P. O. Box 295

TENNESSEE—CHATTANOOGA: Ted Nelson Service & CHR Alignment Co., 416-18 Market St. KNOXVILLE: Knoxville Structural Steel Co., P. O. Box 1512. MEMPHIS: Dealers Truckstell Sales, Inc., 365 S. Parkway, W. NASHVILLE: Halliburton & Lane Co., Fifth Ave. & McGavock.

TEXAS—DALLAS: Truck Equipment Co., 2409-11 Commerce. FORT WORTH: Truck Equip. Co. HOUSTON: McArthur Welding & Press Co., 5525 Clinton Dr. SAN ANTONIO: Patten Machinery Co., 1318 N. Alamo St. CORPUS CHRISTI: Truck Equip. Co., 1501 Port Ave.

UTAH—SALT LAKE CITY: Hercules Body Sales Co., 2205 Highland Drive.

VIRGINIA—NORFOLK: A. S. Drumwright & Co., 1921 Brambleton Ave. RICHMOND: Crenshaw Equipment Co., Inc., 304 E. Main St. WINCHESTER: Schade Equipment Co.

WASHINGTON—SEATTLE: Allied Trailer & Equipment Co., 1331 Third Ave.

WEST VIRGINIA—BLUEFIELD: Truck Equipment Engineering Co., P. O. Box 387. CHARLESTON: West Virginia Tractor & Equipment Co., P. O. Box 473. CLARKSBURG: West Virginia Tractor & Equipment Co., 100 Wood St. HUNTINGTON: Huntington Truck Equipment Co., 919 Sixth Ave.

WYOMING—CASPER: Colorado Builders Supply Co.

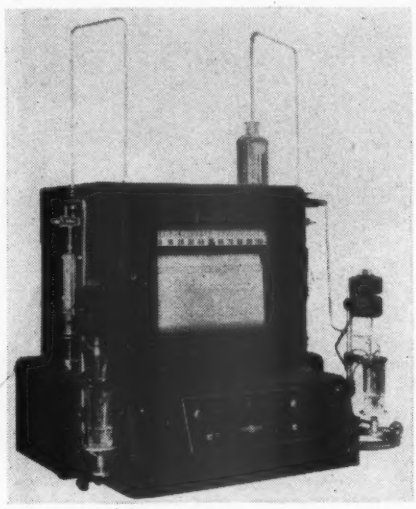
New Machinery And Supplies

● Dual Recordomatic Titrator

A dual automatic recording device for plotting automatic titration curves has been announced by Precision Scientific Company of Chicago. The new device provides a permanent and complete record of titration curves, easily reproducible and superior to the curves obtained manually. It reportedly eliminates all work on the part of the operator except that of preparing solutions and loading the feed unit. Titrations proceed rapidly; and since the device includes two complete titration set-ups, an important additional time-saving factor is introduced. While one sample is being titrated, a second sample may be prepared for analysis.

The instrument consists of two parts: (1) a reagent-feeding device, and (2) a recording potentiometer. The reagent feeding unit includes two complete set-ups consisting of a 50-milliliter syringe and the indicating electrodes.

For recording and controlling the titration, a modified Brown Electronic potentiometer is used. The input to the potentiometer consists of a line-operated vacuum tube amplifier of the balanced tube type. Five meter scale and potentiometric circuits are provided which give the instrument a total range of —1.5 to plus 1.5 volts, and a full pH range of 0 to14.

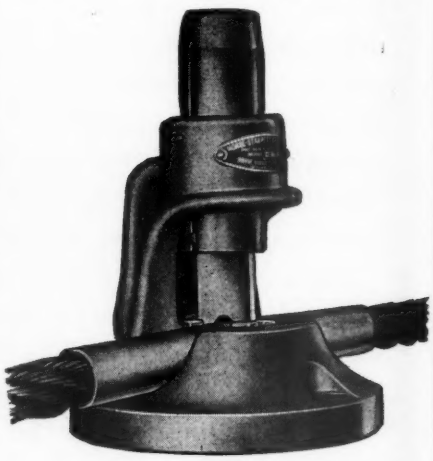


● Contains two titration set-ups.

● Wire Rope Cutter

Montgomery & Co., Inc., 53 Park Place, New York 7, N. Y., announce the Morse-Starrett wire rope and cable cutter, a device now in use in many industrial plants, mines and stone quarries.

With this cutter any grade or size of cable up to 1½ inches may be seized or whipped and cut by one man in less than one minute, according to the manufacturers. Both cut ends of the cable will be left encased in a steel band and substantially of the same original diameter as the cable. The peculiar shape of the cutting blade and die prevents flattening of the cable during the cutting and permits the natural lay of the strand to be preserved. Copper or aluminum bands are also available for securing the cut ends.

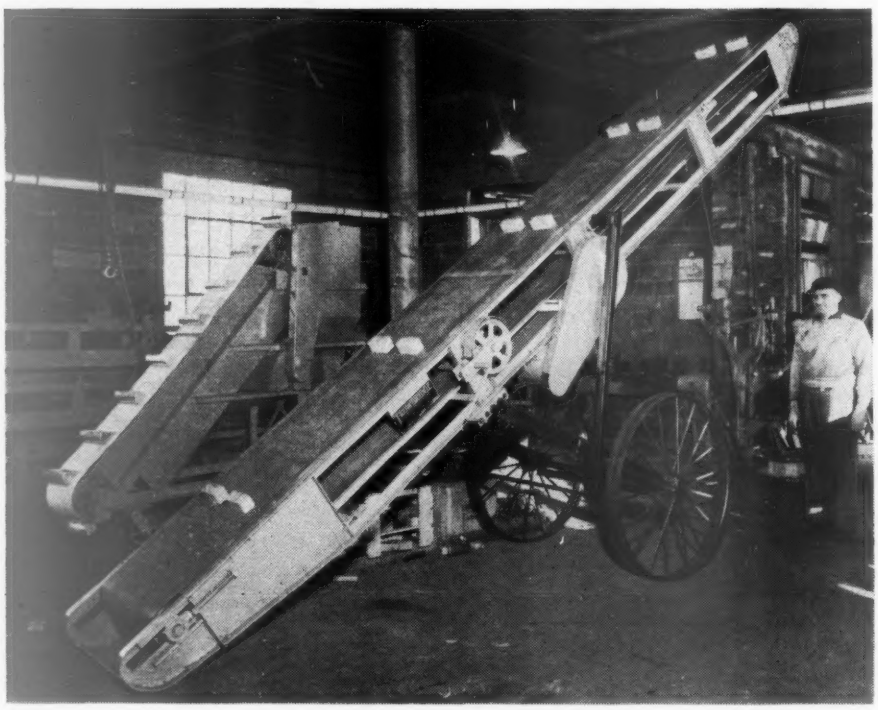


Rope in position for cutting.

● Dew Point Recorders

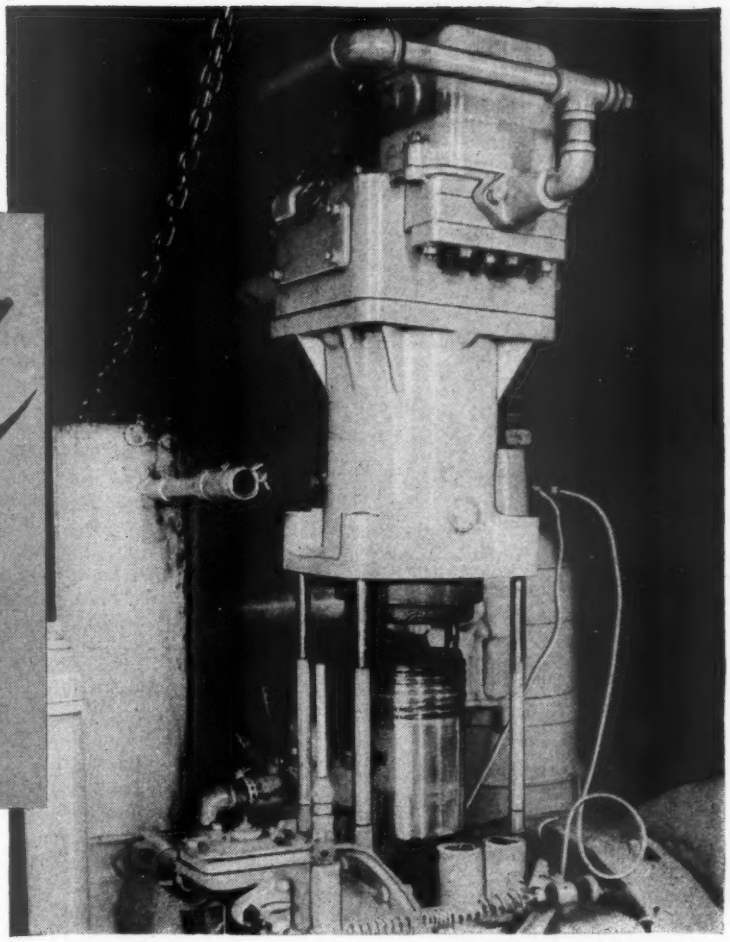
Dew point recorders and recording controllers, said to be the first simple, continuous dew point measuring instruments available for industrial use, are the newest additions to the line of industrial instruments offered by The Foxboro Company, Foxboro, Mass.

Among the applications reported for these devices are installations for storage



The Trowbridge Conveyor Company of Clifton, N. J., has announced a new type of undercarriage for portable conveyors. The new product, known as the HI-LO carriage, provides maximum and minimum range of elevation for the conveyor. It is useful in truck loading and other applications where the low position should be at the minimum and where a mast-type of carriage would be a disadvantage.

Clean ... FROM EAST CHICAGO



At Sinclair Research Laboratories, East Chicago, Ind., skilled technicians specialize in keeping it clean . . . for you.

With today's accent on the detergency qualities of engine lubricants, Sinclair Research is constantly making tests to determine the cleansing properties of motor oils, diesel lubricants, and other products, using the special "come-apart" single cylinder diesel engine shown above.

Such tests—duplicating actual operating conditions—constitute an essential part of Sinclair's outstanding research, which has resulted in the development of ever finer petroleum products for over 30 years. At its soon-to-be-completed new Research Center, Harvey, Ill., Sinclair will continue to develop industrial and automotive lubricants of outstanding performance with greater facilities, finer equipment, and more highly skilled personnel than ever before.

Sinclair Automotive Oils

OPALINE

TBT

OIL

FOR CLEAN ENGINES
FOR MAXIMUM POWER
FOR LOW MAINTENANCE
IN TRUCK, BUS AND TRACTOR

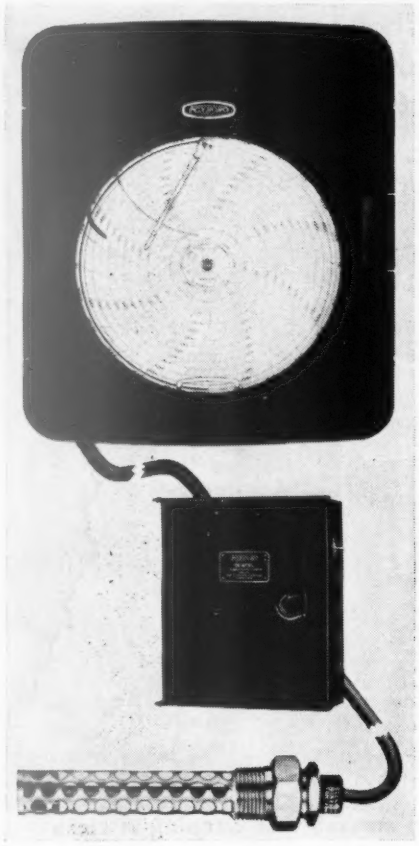
SINCLAIR REFINING COMPANY • 630 FIFTH AVENUE, NEW YORK 20, N. Y.

SINCLAIR

Lubricants for Industry

FINEST CRUDES + EXPERT RESEARCH and MANUFACTURING CONTROL = OUTSTANDING PERFORMANCE

container research work, air conditioning, and dryers. A special feature of the equipment is a patented measuring element, the "Dewcel," which has the general appearance of a perforated metal cylinder about 9 in. long and 2 in. in diameter. Inside is a central tube containing the thermal bulb, wrapped with a saline-saturated woven glass tape and two windings of silver wire, to conduct the heating current.



Recorder and measuring element.

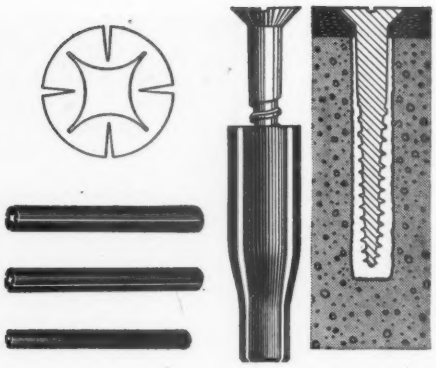
Two types of recorders are offered—the "Dynalog" all-electronic instrument and the liquid-filled system type. The recording instrument can be mounted in a control panel as far removed as 600 feet from the measuring element.

● Screw Anchors

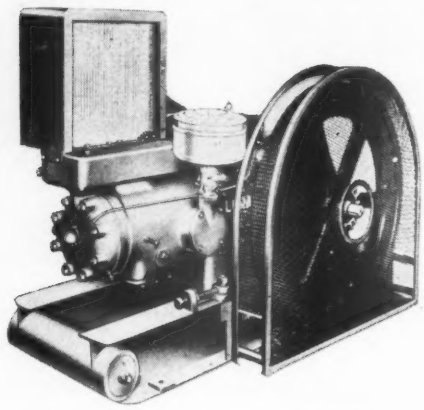
A basic new development now makes available a universal all-purpose screw anchor known as the "Sandscott Plastic Expanding Anchor." The device, manufactured by Holub Industries, Sycamore, Ill., may be used with wood screws or lag screws for fastening into any material, such as concrete, brick, plaster, tile, stone, marble, terra cotta, composition, etc.

Overlapping internal and external slits give "concertina" expansion, which develops a holding power far greater than ordinary requirements. Pittsburgh Testing Laboratory conducted many "pull-out" tests. The maximum load pull was 2,965 lbs., using a No. 20 screw.

The anchors are made slightly larger in diameter than the hole size to be drilled. The expansion feature compresses itself and the toughness of the plastic enables it to be driven into a tight hole, thereby obtaining every fraction of holding power when the screw expands the anchor. The plastic reportedly has a tensile strength of 5,000 lbs. p.s.i. It is unaffected by water, moisture, weather or acids and is immune to age and corrosion. It will withstand temperatures of 78 deg. F. below zero or up to 180 deg. F. and is shock- and vibration-proof.



How the anchor works.



Lorain heavy-duty two-cycle horizontal engines, manufactured by the White-Roth Machine Corporation, Lorain, O., have a rating of 10.7 hp. at 300 r.p.m. and 21.4 hp. at 600 r.p.m. They may be operated with natural gas, butane or diesel fuel. Illustrated is the Type L.

● Versatile Mill

Announcement of the "HY-R-Speed" grinding mill, which is highly efficient for dispersing pigments used in the production of colored cement, finished coat stucco, floor topping, cement paint, colored cement mortar and a wide variety of similar products has been made by Morehouse Industries, 1156 San Fernando Road, Los Angeles 31, Calif.

Grinding Mill.

HY-R-Speed mills perform a number of functions, including grinding, dispersing, mixing, disintegrating, homogenizing and emulsifying.

Utilizing a new high speed principle which enables them to operate at 3600 r.p.m., they are noteworthy for big volume production.

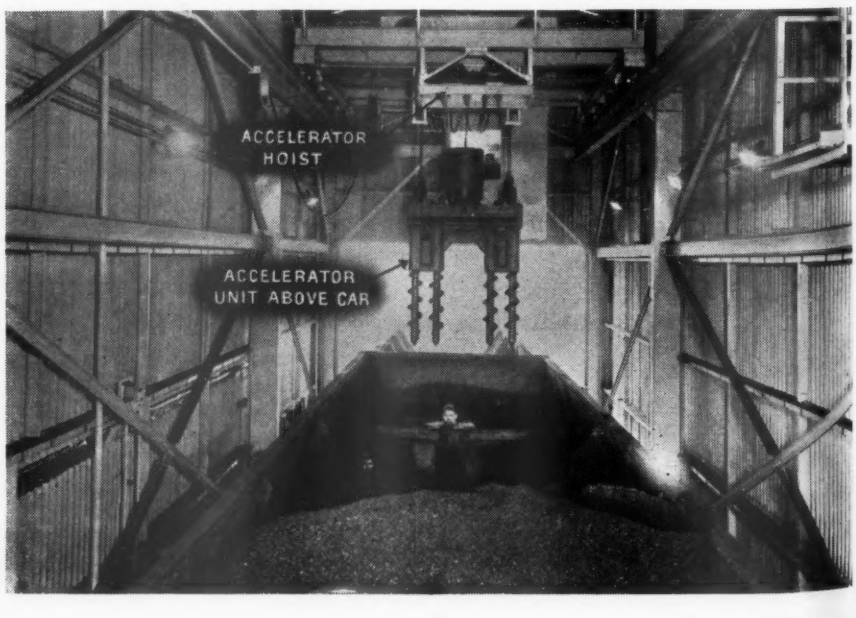
Due to compact dimensions, 5 ft. by 1½ ft., HY-R-Speed mills need only a fraction of the space required by other machines. The grinding stones are 7¼ in. in diameter; the motor is 20-hp., 3-phase, 50/60 cycle, 220/440 volts a.c., and is drip-proof. The weight, fully assembled, is 700 pounds.

● Unloading Aid

For discharging packed or frozen material from cars, Stephens-Adamson Mfg. Company offers its "Accelerator," which consists of four power-driven reversible screws which are operated from a traveling crane over the unloading track.

The screws are rotated to dig themselves into the packed or frozen material; and when well into the mass, the direction is reversed so that the action of the screws is to force the material down and out through the bottom.

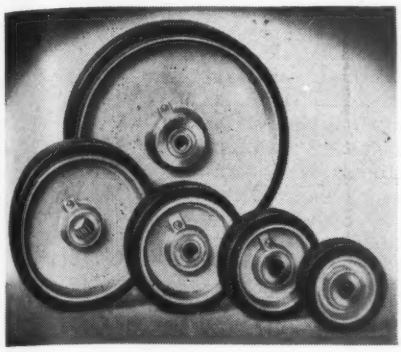
The control permits rapid changes in position, vertically, horizontally or laterally. A hoist raises and lowers the digging screws.



Screw action aids unloading.

● Lightweight Wheels

Lightweight aluminum-alloy industrial wheels of compact design and in a complete range of sizes from 4 to 12 inches in diameter has been announced by the Airlite Division of the Aerol Company, 1923 E. Washington Blvd., Los Angeles,



Aluminum-alloy wheels.

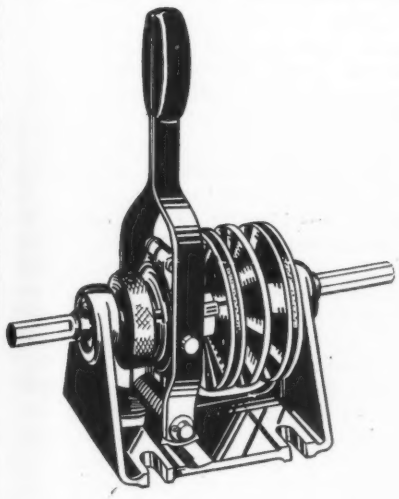
Calif., manufacturers of modern materials-handling equipment. These wheels have been designed to fill the need for an economically-priced, easy-rolling wheel of maximum efficiency.

Marketed under the trade name "Airlite," the new wheels are available with either a molded-on Grade A rubber tread or an all-aluminum tread. They are corrosive-resistant and their special design permits easy, free rolling.

Airlite wheels may be had with either roller-bearings, ball bearings, or bronze bushings; and roller- or ball-bearing equipped wheels have grease fittings to provide easy servicing. Available in 4, 5, 6, 8, 10 and 12-in. sizes, with all standard axle sizes, Airlite wheels are extremely light.

● Packaged Clutch

A versatile new "packaged clutch" developed by the Marine Products Company, 515 Lycaste Avenue, Detroit 14, Mich., permits a varied number of drive



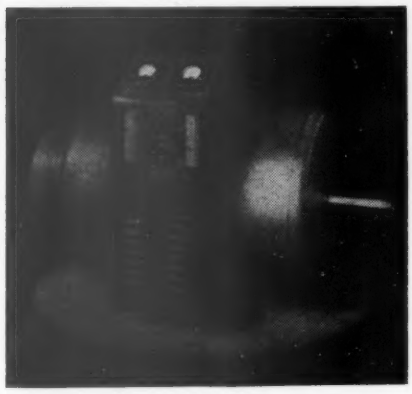
Facilitates many drive combinations.

combinations and consists of a clutch assembly which is self-contained in a bracket. These combinations are provided by a double extension shaft and a double groove pulley between the clutch face plates. The clutch can be directed-connected or V-belt driven.

Large, heavy-duty ball bearings permit operation at maximum speeds of 3600 r.p.m. The rated capacity is ½ hp. per 100 r.p.m.; and the maximum recommended capacity is 10 hp.

● Packaged Generators

A new packaged generator announced by Electric Machinery Mfg. Company, Minneapolis, Minn., for use in engine-generator sets is a compact, factory-assembled unit including revolving-field generator, direct-connected exciter, automatic voltage regulating circuit, meters, and selector switch for pre-setting voltage. The only external connections



Factory-packaged generator.

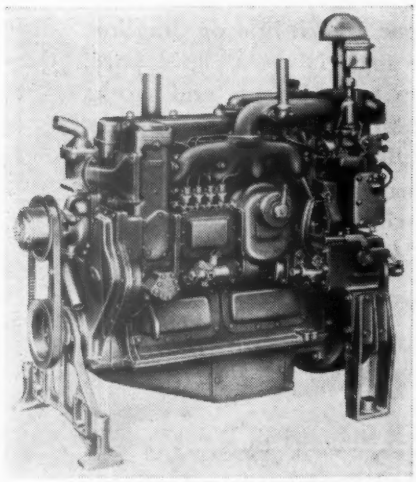
needed are leads to a generator switch.

The built-in automatic voltage regulating circuit has no moving parts and requires no maintenance; it is permanently connected and factory-adjusted to hold terminal voltage within 2 percent of the voltage selected, at any load or power factor within the generator rating.

● New Model Diesel Engine

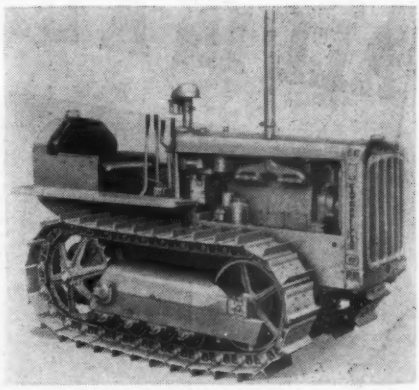
A 4-cylinder diesel engine and a new track-type tractor and a motor grader powered by it have been placed in production by the Caterpillar Tractor Company of Peoria, Ill. The new products include the diesel D311 engine, the D2 track-type tractor and the No. 212 motor grader.

The D311 engine, focal point of



New 4-cylinder diesel engine.

the power increases found in the tractor and motor grader, replaces the D3400 in the company's line and is available as an industrial power unit, an electric set and a marine engine. It develops an out-



Track-type tractor.

put, with radiator fan and full equipment, of 49 hp., at 1700 r.p.m.

The new D2 tractor has 32 drawbar hp. and 38 belt hp., a 24 percent increase in power over the predecessor model. The 212 motor grader, at 45 hp., shows a 29 percent increase in power over the previous motor grader of this size and weight.

● Swivel-Hook Assembly

The Thomas Laughlin Company of Portland, Me., has started production of a new replacement swivel hook assembly embodying Laughlin's recently-improved safety latch. The new hook comes in ½- and 1-ton sizes and is recommended for cranes and hoists or for lashing applications where safety is an important consideration.

Hook assembly.

No machining is required to install the swivel safety hook; it is necessary only to unbolt the old load hook swivel assembly and bolt the new one on.

The recently-developed Laughlin assembly features the new, improved safety latch on conventional styles of hoist hooks which leaves 80 percent of the regular throat opening and which will not open until the operator releases the latch with his fingers. A graphite-impregnated bronze washer under the nut promotes easy swivel action, and the heat-treated alloy swivel bolt gives maximum strength and long life.

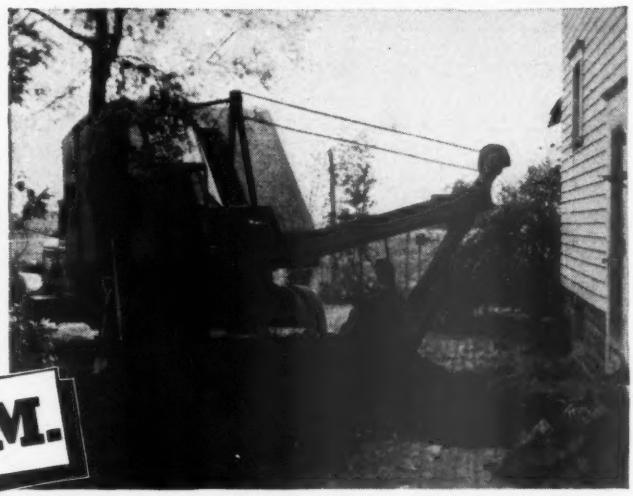
● Correction

We regret that the description of the Weston Dump Body Company's new lime spreader (PIT AND QUARRY, October, 1947, p. 104) erroneously stated that the fan spreads the lime over a strip of land 3 ft. wide. Actually, the fan covers a 30-ft. strip.

ALL IN A DAY'S WORK

8 A.M.

• LOADING FROM STOCKPILE AT 8 A.M.



10 A.M.

• DITCHING 30 MILES AWAY AT 10 A.M.

The SCHIELD BANTAM travels on the highway at normal speeds. Drives right up to the job and starts to work without wasting time. Use it as a dipper, trench hoe or dragline. The BANTAM handles stockpile material at a rapid pace, digs ditches in varying widths up to 10′ deep, and works wherever larger heavy weight equipment is not profitable. Simple, centralized controls. Full-circle design. Perfectly balanced for easy handling. Interchangeable booms. Wide selection of attachments for fast operations. Complete unit weighs 4 tons. Mounts on any 1½ ton truck.

WRITE FOR COMPLETE DETAILS

SCHIELD BANTAM CO. INC.
Waverly, Iowa

BANTAM

SCHIELD BANTAM 1/3 YARD PORTABLE SHOVEL•TRENCH HOE•CLAM•DRAGLINE

TRADE NOTES

T. A. Dunn

Pioneer Engineering Works, Inc., Minneapolis, Minn., announces the appointment of Truman A. Dunn as sales engineer for Kentucky, West Virginia, Ohio, Indiana, lower Michigan and northern Illinois.

Mr. Dunn served with the Ninth Naval Construction Battalion during World War II. Prior to the war, he had been associated with his father in the production of crushed stone and agricultural limestone.

L. S. Coulter

Promotion of Lee S. Coulter to manager of the Industrial Sales Division of American Hoist and Derrick Company was announced recently

Mr. Coulter, who has been associated with American Hoist for 18 years, will direct sales and merchandising for his division through the company's world-wide sales organization.

Mark R. Woodward, who was appointed director of the Cement, Lime and Allied Plants Division of Vulcan Iron Works last year, died on August 22. Previous to his association with Vulcan, Mr. Woodward had been assistant chief engineer of the Lehigh Portland Cement Company. He had also been employed by the Babcock & Wilcox Company and the Marblehead Lime Company.

In line with expanding operations at The Bailey Technical Schools, C. W. Bailey, president, today announced the appointment of Lee C. Morris, as director of education for the several schools. Mr. Morris is already serving in his new capacity at The Bailey Schools, which are located at 1651 S. Grand Blvd., St. Louis.

The Bailey Technical Schools were the first to offer a complete course in diesel engines. The curricula also include courses in electricity, radio mechanics, refrigeration, and air conditioning.

H. C. Allington has been appointed general manager of sales of the Wickwire Spencer Steel Division of The Colorado Fuel and Iron Corporation of New York City, to succeed the late A. G. Bussmann.

Mr. Allington has been assistant gen-

eral sales manager for Wickwire since 1943.

Announcement has been made by the Shovel and Crane Division of Lima Locomotive Works, Incorporated, Lima, O., that the vacancy caused by the untimely

F. L. Maus

R. A. Otterness

death of G. L. Lillard, former district manager at Memphis, Tenn., will be filled by Fred L. Maus. Mr. Maus will cover Tennessee, North and South Carolina, Georgia, Florida, Alabama, Louisiana, and Arkansas.

R. A. Otterness, former sales representative in the Southwestern and Northwestern territory, has been appointed to succeed Mr. Maus at Dallas as district manager, covering Texas, New Mexico, Colorado and Oklahoma.

Wilhelm-Davies Company, Incorporated, North Colony Road, Wallingford, Conn., has been appointed sales agent for the complete line of Lima shovels, cranes and draglines in the state of Connecticut.

The Buda Company has announced the appointment of Harry G. Campbell as sales manager of the DieseLight Division of The Buda Company, Harvey, Ill. The DieseLight Division of The Buda Company handles sales and manufacture of diesel-electric and gasoline-electric generator sets.

A large-scale sales promotion campaign was launched this fall by the Chevrolet Motor Division and its 6,200 direct dealers. Known as the "Bring Them Back to Chevrolet" campaign, the drive will cost millions of dollars and involve more than 75,000 dealer employees in every state.

Objectives of the campaign are to obtain new service customers and to develop new wholesale parts customers. The campaign covered the months of September and October.

G. K. Whyte, who for the past several years has been connected with the Chase Bag Company's St. Louis sales department, will assume the duties of sales manager of the St. Louis branch.

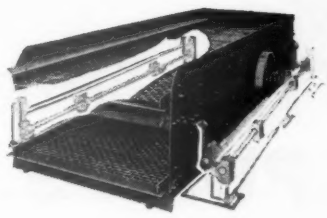
The Eimco Corporation has announced the new location of its Chicago office, 3319 Wallace Street, where the firm occupies an entire floor of the Mayflower Building.

Here's Why Profit-Minded Operators Everywhere Choose SECO Vibrating Screens

There's a right SECO for your needs

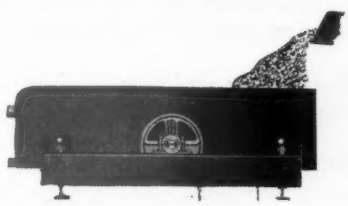
More Tons Per Hour

1. Results count! Yes, day after day performance records piled up by Seco screens over the last eight years on all types of installations prove conclusively their ability to screen more tons per hour. Here's How



Patented Equalizer Assembly

2. This basic engineering advantage makes the difference! Seco and only Seco has a fully controlled true circular action—that never varies—with less maintenance, keeps every inch of screen surface working at all times.



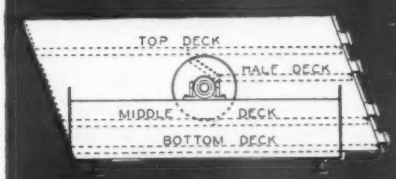
No Bobbing • Galloping or Weaving

3. There's no lost motion—no slowing up of the load—blinding is kept to a minimum—and just think how much longer a Seco screen will hold up on the job with less maintenance—because there's no excess strain on any one part. Get more production per hour—per month—per year. Get a SECO! Write Dept. A.

SINGLE DECK

DOUBLE DECK

TRIPLE DECK



THREE AND ONE HALF DECK

To scalp a small amount of oversize and make 3 finished sizes as well as fines.

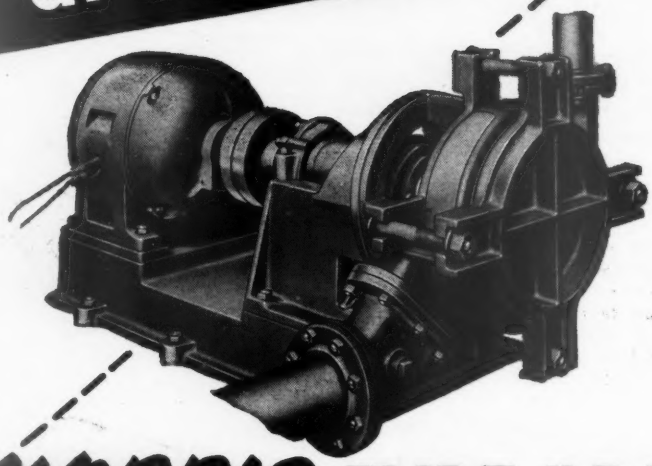
SECO

Screen Equipment Company, Inc.

Buffalo 21, New York

In Canada: United Steel Corp., Ltd., Toronto

EASIER MAINTENANCE at LOWER Cost



MORRIS TYPE "R" SLURRY PUMPS

FOR CEMENT MILL USE—

The Only Pump With All These Features!

1. *The gland is under suction pressure only.*

Unlike conventional pumps, the packing in the Morris Type "R" is under suction or positive head pressures only. It handles suction lifts with a hub sealing pressure of 2 or 3 psi. Under positive head, the pressure on the hub sealing ring need not be greater than the head at the intake.

Operation under low pressures reduces wear and tear of abrasive solids . . . practically eliminates packing troubles.

2. *Easily dismantled by loosening four bolts.*

To remove the impeller, simply loosen four bolts, slip them out of disc slots and pull off end cover. Suction and discharge piping remains undisturbed . . . and the impeller comes out by threading it off the shaft.

Worn clearances on suction side of impeller are easily closed by tightening four adjusting screws.

3. *Shell interchangeable for right or left hand rotation.*

Suction and discharge nozzles can be rotated around axis of pump to positions in any of the four quadrants. All together, there are 72 different nozzle locations.

4. *No internal studs or bolts. No troublesome internal fits and joints.*

ALL THESE FEATURES MAKE THE MORRIS TYPE "R" PARTICULARLY SUITED TO CEMENT MILL USE.

The experience of 83 years in the designing and building of pumps is at your disposal. Let our engineers help you select the exactly right pump for your particular needs. No charge or obligation.

MORRIS MACHINE WORKS, Baldwinsville, N. Y.
Sales Offices in Principal Cities

MORRIS *Centrifugal Pumps*

Lima Locomotive Works, Incorporated, Lima, O., and General Machinery Corporation, Hamilton, O., two of the country's oldest and best known manufacturing concerns in the heavy equipment industry, recently merged forming the Lima-Hamilton Corporation.

The action will give the Lima-Hamilton Corporation a diversified line of products including diesel- and steam-powered locomotives, stationary and marine diesel engines, heavy and medium machine tools, presses for the automotive industry, plate glass polishing machinery, can-making machinery, and the Lima line of power shovels, cranes, draglines, and pull-shovels.

Samuel G. Allen and John S. Dixon, former board chairman and president of Lima Locomotive Works, Incorporated, occupy the same positions in the new Lima-Hamilton Corporation. George A. Rentschler, former board chairman of General Machinery Corporation, assumes the position of chairman of the executive committee.

In the Lima Shovel and Crane Division of the corporation, Henry Barnhart is vice-president in charge. Paul R. Ehrgott is general sales manager and H. H. Buchanan is director of foreign operations.

J. B. Elliott

Link-Belt Company announces the following changes in sales management personnel.

James B. Elliott, heretofore divisional manager for Caldwell plant products, with headquarters at the Caldwell plant in Chicago, has been appointed divisional sales manager at the company's plant in Minneapolis, Minn.

Erwin A. Wendell, formerly district sales manager, Chicago branch, with headquarters at the Pershing Road plant,

E. A. Wendell

T. W. Matchett

has been appointed divisional sales manager for Caldwell plant products.

T. W. Matchett, heretofore district sales engineer at New York, has been appointed district sales manager, Chicago branch, with headquarters at the Pershing Road plant.

Gustave Treffeisen has been appointed sales manager of the Alemite Distribution Division of Stewart-Warner Corporation, succeeding Charles I. Kraus, it was announced by F. A. Hiter, senior vice-president of Stewart-Warner. Mr. Kraus, effective August 1, became Alemite distributor at Minneapolis, Minn.

Three shifts in the sales organization of Goodyear Tire & Rubber Co.'s Mechanical Goods Division are announced by H. D. Foster, division manager.

R. E. Pauley, district manager at Pittsburgh, becomes sales manager of the company's molded goods plant at St. Marys, O. He is succeeded by Robert B. Warren, who has been Eastern railroad sales manager for Goodyear in New York City. Howard T. Martin has been named district manager of mechanical goods sales at Dallas, Tex. At St. Marys, Mr. Pauley succeeds Samuel DuPree, whose appointment as an assistant manager of Goodyear's mechanical goods division, with headquarters in Akron, was announced recently.

Transfer of T. J. O'Neil, Ford Motor Company sales district manager at Indianapolis, to managership of the Memphis, Tenn., district has been announced by Walker A. Williams, Ford general sales manager.

H. Y. Ingram, who has been manager at Memphis since September, 1945, has resigned to become a partner in a Ford dealership at Greensboro, N. C.

The following announcement was made recently by Stattsmijnen in Limburg (Dutch State Mines) in the technical press:

"Staatsmijnen in Limburg (Dutch State Mines), Heerlen, Holland, takes pleasure in announcing the appointment of American Cyanamid Company as technical representative for Dutch state mines processes and apparatus on which patents have been applied for or granted in the United States and in many other countries, and which cover the beneficiation of minerals and other fragmentary materials. . . ."

H. K. Porter Company, Inc., has announced the promotion of Harold A. Hintz to Pacific Coast sales manager. He will direct the activities of all Porter sales offices on the Pacific Coast and will maintain headquarters in the Petroleum Building, Los Angeles.

At the same time the appointment of J. F. Morley as district sales engineer, was announced. Mr. Morley will be located at 681 Market Street, San Francisco 5, Calif.

Recent Allis-Chalmers basic industries department appointments name Fred C. Bond technical director and Will Mitchell Jr., director of the department's research laboratory, according to G. V. Woody, manager of the department. Bruce H. Irwin has been appointed assistant laboratory director and director of training for the department.

At the quarterly meeting of the Asphalt Institute, the board of directors elected Wallace D. Craig of Standard Oil Company of New Jersey as vice-president of Division I, comprising the Atlantic-Gulf territory. Mr. Craig succeeds the late Joshua S. Sawyer of the Shell Oil Company, both as vice-president and member of the institute's executive committee.

When properly used Page AUTOMATIC Buckets will outdig ordinary buckets of comparable size.

That's a guarantee you can easily prove for yourself by a competitive test. Compare the production of your present bucket with that of an AUTOMATIC. Hundreds of dragline operators in all kinds of digging have found that their AUTOMATIC buckets dig more yards at a lower cost per yard than any other dragline bucket they have ever used.

Here's why: Page AUTOMATICS dig right in at the first pull on the load line and get a full pay load within one to three bucket lengths regardless of the depth — 20 ft., 100 ft. or more. This means that most of your operations are under or near the end of the boom point where the minimum amount of power is required for hoisting the load. Perfect balance of the AUTOMATIC assures perfect control whether loading or dumping. Quick loading features of AUTOMATIC buckets mean less wear and maintenance on the bucket, cables and the dragline as well as minimum operator fatigue. For more complete details, see your own construction equipment distributor or write for new booklet "How to Get the Most Out of Your Page Automatic Dragline Bucket."

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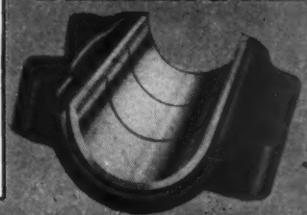

Look for the Flower Trade Mark

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MAGNOLIA METAL COMPANY
24 WEST JERSEY STREET ELIZABETH 4, N. J.

John F. Van Way of Service Equipment Company, St. Louis, Mo., announces the following additions to the firm's sales force:

George H. Holtmann, formerly with Remington Small Arms, has been associated with Service Equipment Co. since February 1. Ralph E. Davis, who has spent many years in the construction industry, joined the firm on July 1.

SECO offices, located at 1002 W. Big Bend Rd., Kirkwood, Mo., expect soon to move to larger quarters.

Harold S. Falk, president of The Falk Corp., was recently elected to the board of directors of Allis-Chalmers Manufacturing Co., at a meeting of the directors, according to an announcement by Walter Geist, Allis-Chalmers president.

Harry W. Hobson, who started with the Du Pont Company as a stenographer 44 years ago and rose to be assistant director of sales in the company's explosives department, died on July 28. He had been active in sales work for Du Pont since 1921.

Roy K. Ferguson, president of the St. Regis Paper Company, N. Y., has announced plans for the construction of a $6,000,000 kraft paper mill and multiwall bag plant at Tacoma, Wash., site of the company's large sulphate pulp mill.

V. C. Douglas, vice-president of the St. Regis Sales Corporation, Chicago, has announced the opening of a multiwall paper bag sales office in Minneapolis. The office is located at 2013 Foshay Tower, and is under the supervision of Harry A. Hughes.

The following appointments in the Equipment Sales Division of Raybestos-Manhattan, Inc., have been announced: Harry C. Dishman, equipment sales manager, Detroit; George T. Young, branch manager, Detroit office; E. E. Juergens, branch manager, Cleveland office; John E. Cole, branch manager, Chicago office.

Frank A. Young, a representative in Allis-Chalmers, Duluth, Minn., branch office since 1944, has been named manager of the office, according to an announcement by J. L. Singleton, vice-president and director of sales, general machinery division.

Cabl-Ox Corporation, 6 N. Michigan Avenue, Chicago, Ill., announces the purchase of the entire and exclusive rights to the Cabl-Ox wire rope clamp, Cabl-Vise and allied wire rope products which it will manufacture and merchandise on a much enlarged and accelerated plan. Some territories are still open for distributorships.

C. S. Herbert, executive vice-president of the Enterprise Engine & Foundry Company, of San Francisco, Calif., announces that the company has acquired the complete line of Hendy marine and stationary diesel engines formerly manufactured by the Joshua Hendy Iron Works of Sunnyvale, Calif.

Desmond Gamble has been appointed sales representative of McNally Pittsburg Foundries, Inc., Pittsburg, Kansas. He takes charge of all territory in the western half of the United States. He was formerly office manager.

Maurice Hooff, general production manager of the Hyster Company and one of the best known heavy-machinery production men in the industry, died on August 22 at Portland, Ore.

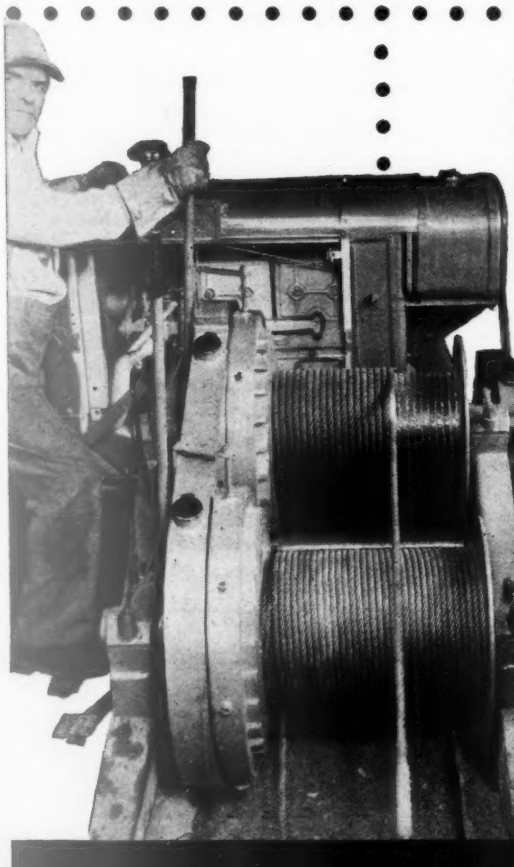
Mr. Hooff had been connected with the Hyster Company since the first day of its operation. He was in charge of production at three Hyster factories successively—Portland, Ore., Peoria, Ill., and Danville, Ill.

Arthur LaMotte, former manager of the technical service section of the Du Pont Company's explosives department and an outstanding figure in the development and industrial application of commercial explosives, died recently at the home of his nephew, Dr. Robert S. LaMotte in Oakland, Calif.

G.L. Lillard, Southern district manager of the Shovel and Crane Division of Lima Locomotive Works, Incorporated, died on August 20 from injuries resulting from an automobile accident on August 7 near Pine Bluff, Ark.

FIRST FOR

STAYING POWER



Staying Power and *Service* are terms that have long been identified with MM industrial power units and engines . . . For many types of continuous service installations MM engines have achieved records in *Dependability* and *Economy* . . . 7 power units ranging from 20 to 242 h.p. furnish ideal power for all types of crushers, hoists, pumps, generators and many more uses.

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Legal Decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

Damages Equal Profits

According to a recent higher court a seller who breaches a sale contract is liable to the seller for damages equal to the profits the seller could or would have earned.

For illustration, in *Palmquist v. Murphy*, 73 N. E. (2d) 644, reported August, 1947, the Board of Education of a City of Rockford entered into a contract with a contractor for the construction of the West Side High School. Thereafter, the contractor entered into a written contract with Material Service Corporation, by which the latter was to furnish all the materials required for the project.

After the Material Service Corporation began to make deliveries of sand, gravel, concrete, etc. the contractor refused to accept the deliveries. The seller sued the contractor for damages. This court held the contractor liable and said that the *basis for calculations of damages* because of contractor's refusal to accept the materials was established by testimony showing *the cost per square yard* of producing and hauling the materials *plus* the profit.

In other words, the contractor was liable to the seller for the profits the latter would have earned had the contractor accepted deliveries of *all materials purchased* under the terms of the contract.

Lease Not Forfeited

Modern higher courts consistently hold that if either party breaches a clause in a gravel lease or other contract the other contracting party has a legal right to cancel the contract immediately. However, according to a recent higher court if either party *continues* performance under the contract *after* the other has breached it, then he cancels or otherwise rescinds the contract.

For example, in *Cozby v. Edwards*, 203 S. W. (2d) 569, reported October, 1947, the testimony showed facts, as follows: One Edwards was the owner of a tract of land and thought it perhaps had valuable gravel deposits thereunder. A contractor named Cozby was selling and using gravel for road and concrete purposes, and wanted to locate and purchase such materials. Edwards and Cozby entered into a written contract giving Cozby the right to explore the premises and ascertain if such deposits were on the premises. Cozby desired to lease the land. Later Edwards and Cozby signed a written contract under which Cozby agreed to pay Edwards 20 cents per cubic yard for road gravel and 35 cents for concrete gravel taken out. On or before the 15th day of each month Cozby was to furnish an itemized statement of amount and quality of the materials so removed during the preceding month and would with such statement pay for all such materials. Also, Cozby agreed to remove a suffi-

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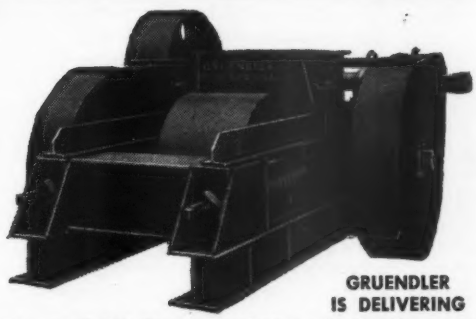

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2X Hammermills up to 15 tons per hr.
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See why the impact action of a NEW HOLLAND 3030 BREAKER will increase your profits

1 Whirl a walnut tied on a piece of string against a wall or table. The impact breaks it with little effort . . . into comparatively uniform pieces because the breaking force is evenly distributed.

2 Now crush a walnut with a pair of pliers. The middle section of the nut is pulverized . . . yet the ends remain in large, irregular pieces. Crushing force is confined to one small area . . . much greater effort succeeds only in producing an undesirable product.

Using the same suspended *impact* action as illustrated by the walnut on a string, a New Holland 3030 Breaker can reduce 30" rock to 7/8" or finer *in one operation* . . . producing a uniform, cubical aggregate. That means bigger profits because of less waste fines . . . less power used. Write for the illustrated booklet describing the Model 3030 Breaker in detail.

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Ask your distributor to show you "The New Stone Age," a color film of the 3030 Breaker in action.

NEW HOLLAND
DOUBLE IMPELLER BREAKERS

cient amount of gravel from the premises within a year that Edwards' royalty would not be less than $4,000 and the contract contained a clause that Cozby would furnish a written *guarantee satisfactory* to Edwards insuring the payment of all sums of money which may become due under the terms of the contract.

Without furnishing this guarantee Cozby operated the gravel pits and Edwards received through the mail a statement and check from Cozby disclosing the quality and quantity of materials taken out by Cozby.

Later Edwards sued Cozby and asked the court to cancel the contract because Edwards refused to furnish a guarantee insuring payment for materials. The lower court cancelled the contract, but the higher court reversed this verdict. In holding that Edwards must comply with the terms of the contract the court said:

"If the plaintiff (Edwards) did temporarily waive the requirement could he later revoke the waiver and declare the contract forfeited, without giving defendant (Cozby) an opportunity to comply with the terms of the contract in the respect mentioned?...We think that where plaintiff (Edwards) has temporarily waived the full performance of making the guaranty, the contract could not be cancelled by plaintiff."

This court also held that the obligation of Cozby to execute and deliver to Edwards a guaranty of the faithful performance of the contract before he removed any gravel from the premises, was a valid condition and if strictly enforced by Edwards it would have prevented Cozby from taking any gravel from the premises and entitled Edwards to cancel the contract lease. However, since Edwards had accepted *one* statement and check from Cozby *before* the latter furnished the *guarantee* this court held that this act forfeited Edwards' right to declare the contract void.

No Bargee

According to a recent higher court a dredging company is primarily liable in damages caused by loading a scow having no bargee.

For illustration, in *Exner Sand & Gravel Corporation v. Gallagher Bros. Sand & Gravel Corporation,* 162 Fed. (2d) 90, reported September, 1947, it was shown that a dredging company loaded a scow with sand and gravel knowing that the scow had no bargee on board. The scow capsized and damaged another scow. The higher court held that the dredging company was primarily liable, and the charterer was secondarily liable. This court said:

"Upon seeing that the scow had no bargee on board, the dredging company was put to its choice: either to refuse to load her at all, unattended as she was, or to give her such attention as a competent bargee would have given."

Also, see *Angeles Gravel & Supply Company v. Crown Corporation,* 183 Pac. (2d) 482, reported September, 1947. Here the testimony showed that the Crown Corporation rented a scow from the Angeles Gravel and Supply Company for $15 per day. The scow

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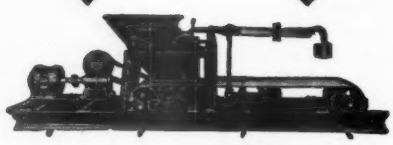

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appeared to be in good condition when rented. The weather was good, there was no wind, and they were traveling against a flood tide when the pile driver started to list and soon afterward, turned over. Further testimony showed that negligence of the operator hired by Crown Corporation caused it to capsize. The higher court held that the Crown Corporation must pay the Angeles Gravel and Supply Company $15 per day from the time the scow capsized until the time it was fully repaired. Also, the court ordered the Crown Corporation to pay the repair bill.

Partner Is Liable

Generally speaking, the courts recognize that individual members of a partnership are without power to pledge the credit of the firm, unless the power be given by other partners. However, according to a recent higher court where a person willfully causes another to believe the existence of a certain state of things the former is responsible for resultant consequences.

For example, in *Hix v. Billingsley,* 195 S. W. (2d) 219, it was shown that a man named Willis solicited a loan for himself and associates to secure funds for drilling a well. Thereafter the loan was obtained upon execution of a note which was signed *by only one* of the associates.

In subsequent litigation the higher court held that Willis was liable on the note although he contended that he could not be liable because he had not signed the note.

Can Sue for Damages

Modern higher courts consistently hold that the State Workmen's Compensation Act protects employers from suits by injured employees *for damages.* However, where the employer fails to supply safety devices for his employees the state compensation laws do *not* protect the employer.

For example, in *Peerless v. Pharr,* 40 S. E. (2d) 106, it was shown that an employer did not furnish an employee with rubber gloves to protect him from the chemical solution. Consequently the dye poisoned the employee.

This court held that the employee could sue the employer for damages.

This court also held that all employers must use reasonable care and diligence to provide a safe place for employees to perform work. Failure to do so results in the employer being liable in damages, if the employee cannot recover compensation under the State Workmen's Compensation Act.

Fair Labor Standards Act

Whether an employee is engaged in interstate commerce, and must be paid wages specified by the Fair Labor Standards Act, depends *not* upon whether the employee's activities indirectly relate to interstate commerce, but upon whether they are actually so closely related to the *movement* of the materials in commerce, as to be a part of it. See *Phillips v. Star Company,* 149 Fed. (2d) 416, where it was shown that 95 percent of the employer's business was done with customers within the state and 5 percent

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American ACS features sturdy sectional construction, dust-tight machined joints. All crushing parts of extra heavy manganese steel.

American ACS Crushers are built for high capacity, heavy duty production with individual size control assuring a uniform run of desired sizes from roadstone coarseness to agstone fineness in the same run with accurately governed ratios. Center feed for high ratio of fines and front feed for minimum fines. Capacities up to 250 TPH.

Typical screen analysis for limestone produced by ACS crusher using 2½" grate bar openings:

- 4.4% passing 2½" screen retained on 1½" screen.
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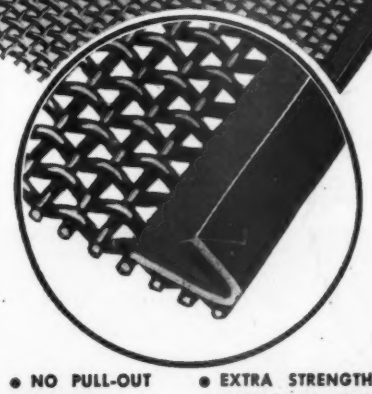

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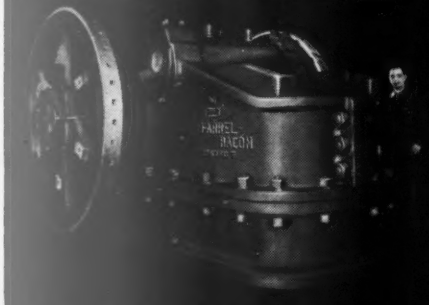

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with people outside that state.

The employees sued for back wages, overtime, attorney's fees, etc. under the Fair Labor Standards Act. The higher court held in favor of the employees.

Owns Banks of Stream

Recently a higher court held that a company which owns a non-navigable stream owns the banks, and all sand and gravel deposits thereon. This is so irrespective of easements or contracts giving others the right to use or appropriate materials from the channel.

For example, in *Nephi Irr. Company v. Bailey,* 181 Pac. (2d) 215, reported September, 1947, the testimony showed facts, as following: A water corporation held an easement to flow water through a channel and for many years cleaned sand and gravel from the channel and piled it on the banks. A sand and gravel company which owned the land adjoining the stream took the material. The water company sued for conversion of the gravel and asked the court to award damages against the sand and gravel company equal to the market value of the material it appropriated.

In holding the sand and gravel company not liable, the higher court said:

"If the owner of the bank or shore owns the bed of the stream of water any vertical addition to the bed, whether or not sufficient in depth to appear above the water, belongs to him because his ownership extends upwards as well as downwards."

Repossesses Plant

According to a recent higher court when a purchaser of equipment on deferred payments misses making *one* payment, the seller may immediately repossess the equipment.

For example, in *McConnell v. District Court of Seventeenth Judicial Dist.,* 182 Pac. (2d) 846, reported September, 1947, it was shown that a sand and gravel company purchased on the installment payment plan from a manufacturer a plant and machinery to crush, wash and grade gravel and sand. This plant was erected at a sand and gravel pit and was to be used to process sand and gravel. After the initial payment the company defaulted in the subsequent installments, whereupon the manufacturer terminated the contract and sued for possession of the plant and machinery.

The higher court promptly held in favor of the manufacturer.

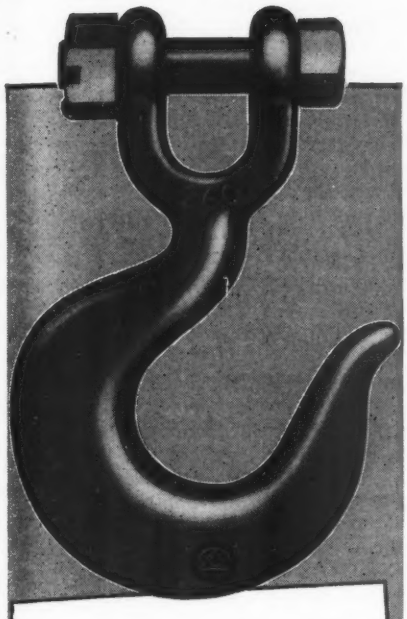
Purchaser Is Inconsistent

All higher courts hold that "inconsistency" of a purchaser may obligate him to keep and pay for used equipment, machinery or merchandise which does *not* comply with the terms of the positive guarantee given by the seller.

For example, in *Willis,* 233 N. W. 673, it was shown that a purchaser notified a seller of a used machine that it was very unsatisfactory, and did not comply with the terms of the guarantee. After giving this notification the purchaser used the machine for six days.

In subsequent suit the higher court held that the purchaser must keep and pay for the machine because he was "inconsistent" by using the machine

FITTING NEWS!



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- **QUICK** and easy to attach with bolt, slotted nut and cotter. No welding . . . no special fittings needed.
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- **EASY** to change . . . easy to switch from job to job as needed.
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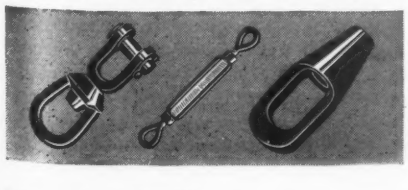

after he had notified the seller that it was unsatisfactory.

Appropriates Quarry

Obviously, if a tract of land is appropriated by the government, state or municipality other lands in the neighborhood will increase in market value. Therefore, the legal question arose whether the owner of land adjoining a tract which had been appropriated for public improvements may recover the enhanced value of his land.

For example, in *Tiger Quarries v. United States,* 143 Fed. (2d) 110, it was shown that the United States condemned 960 acres of land for public improvements. The Tiger Quarries owned approximately 42 acres adjoining this improvement which later was appropriated. The jury allowed the Tiger Company $12,158, and ordered the government to pay this amount to the quarry company. The latter appealed to the higher court on the contention that the normal value of its land had increased considerably since the government had started its first project.

The higher court upheld the jury's verdict.

Double Wages

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"Neither do we find any merit in the suggestion that the agreement tended to create a monopoly or control prices. Certainly a manufacturer can operate through distributors, choose his agents and prescribe how the business shall be operated without creating a monopoly."

"Cape Ann"

FORGED STEEL DROP BALL

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SPRAGUE & HENWOOD, Inc.

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with people outside that state.

The employees sued for back wages, overtime, attorney's fees, etc. under the Fair Labor Standards Act. The higher court held in favor of the employees.

Owns Banks of Stream

Recently a higher court held that a company which owns a non-navigable stream owns the banks, and all sand and gravel deposits thereon. This is so irrespective of easements or contracts giving others the right to use or appropriate materials from the channel.

For example, in *Nephi Irr. Company v. Bailey,* 181 Pac. (2d) 215, reported September, 1947, the testimony showed facts, as following: A water corporation held an easement to flow water through a channel and for many years cleaned sand and gravel from the channel and piled it on the banks. A sand and gravel company which owned the land adjoining the stream took the material. The water company sued for conversion of the gravel and asked the court to award damages against the sand and gravel company equal to the market value of the material it appropriated.

In holding the sand and gravel company not liable, the higher court said:

"If the owner of the bank or shore owns the bed of the stream of water any vertical addition to the bed, whether or not sufficient in depth to appear above the water, belongs to him because his ownership extends upwards as well as downwards."

Repossesses Plant

According to a recent higher court when a purchaser of equipment on deferred payments misses making *one* payment, the seller may immediately repossess the equipment.

For example, in *McConnell v. District Court of Seventeenth Judicial Dist.,* 182 Pac. (2d) 846, reported September, 1947, it was shown that a sand and gravel company purchased on the installment payment plan from a manufacturer a plant and machinery to crush, wash and grade gravel and sand. This plant was erected at a sand and gravel pit and was to be used to process sand and gravel. After the initial payment the company defaulted in the subsequent installments, whereupon the manufacturer terminated the contract and sued for possession of the plant and machinery.

The higher court promptly held in favor of the manufacturer.

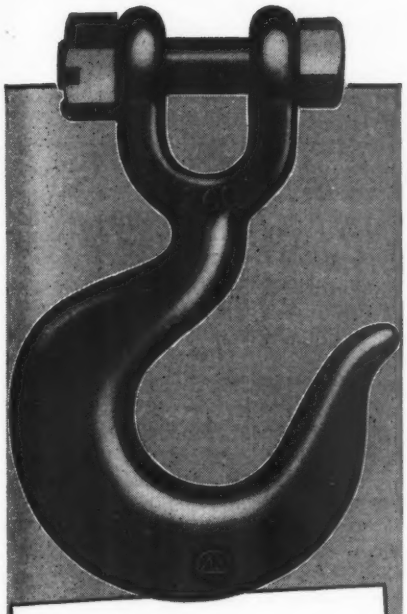
Purchaser Is Inconsistent

All higher courts hold that "inconsistency" of a purchaser may obligate him to keep and pay for used equipment, machinery or merchandise which does *not* comply with the terms of the positive guarantee given by the seller.

For example, in *Willis,* 233 N. W. 673, it was shown that a purchaser notified a seller of a used machine that it was very unsatisfactory, and did not comply with the terms of the guarantee. After giving this notification the purchaser used the machine for six days.

In subsequent suit the higher court held that the purchaser must keep and pay for the machine because he was "inconsistent" by using the machine

FITTING NEWS!



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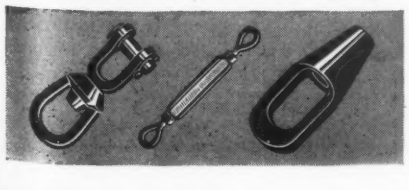

after he had notified the seller that it was unsatisfactory.

Appropriates Quarry

Obviously, if a tract of land is appropriated by the government, state or municipality other lands in the neighborhood will increase in market value. Therefore, the legal question arose whether the owner of land adjoining a tract which had been appropriated for public improvements may recover the enhanced value of his land.

For example, in *Tiger Quarries v. United States,* 143 Fed. (2d) 110, it was shown that the United States condemned 960 acres of land for public improvements. The Tiger Quarries owned approximately 42 acres adjoining this improvement which later was appropriated. The jury allowed the Tiger Company $12,158, and ordered the government to pay this amount to the quarry company. The latter appealed to the higher court on the contention that the normal value of its land had increased considerably since the government had started its first project.

The higher court upheld the jury's verdict.

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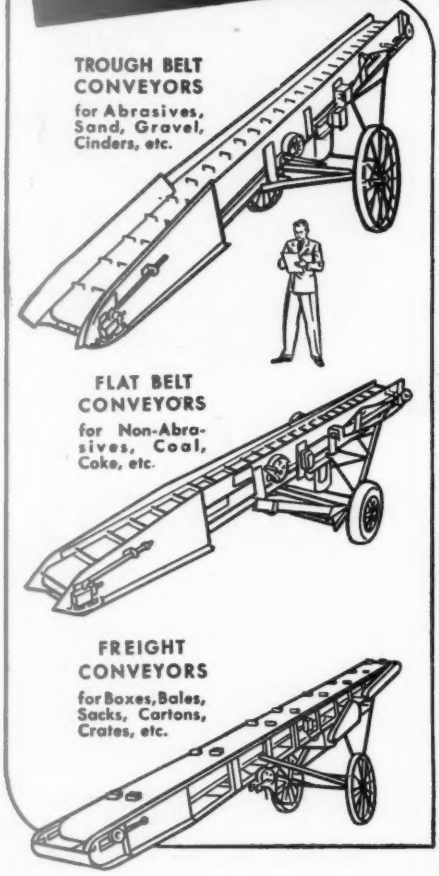
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TRAFFIC News Digest

ILLINOIS FREIGHT ASSOCIATION DOCKET

Docket IRC 511-639—Sand and gravel, carload, minimum weight as provided in Central Freight Association Tariff 420-I, from Nelson, Ill., to Chicago, Ill. Present: 110 cents per net ton. Proposed: 60 cents per net ton for single line application; 80 cents per net ton for joint line application.

Docket IRC 511-640 (A)—Stone, viz.: stone, ground or pulverized crushed or rough quarried; also strippings of stone quarries in straight or mixed carloads, minimum weight 90 percent of the marked capacity of car, except that when cars are loaded to full cubical or visible capacity, actual weight will apply, but not less than 60,000 pounds, except as otherwise specifically provided.

(B)—Agricultural limestone, also ground limestone, dust and limestone, ground, carload, minimum weight 90 percent of the marked capacity of car, except that when cars are loaded to full cubical or visible capacity, actual weight will apply, but not less than 60,000 pounds.

From Grafton, Ill., to stations on the Pennsylvania Railroad in Illinois.

To (representative)	Proposed rates *	†
Farrington, Ill.	144	144
Casey, Ill.	132	132
Effingham, Ill.	127	127
Altamont, Ill.	119	119
Hagerstown, Ill.	119	91
Troy, Ill.	106	91

*Crushed stone; †Agricultural limestone.

Subject Ex Parte 162 increases and such increases as may be subsequently authorized by the Commission. Present Rates: None in effect.

CENTRAL FREIGHT ASSOCIATION DOCKET

Docket 84185 (2)—It is proposed to establish on sand (except blast, core, engine, filter, fire or furnace, foundry, glass, grinding or polishing, loam, moulding or silica) and gravel, in open-top cars only, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Lafayette, Ind., to Portland, Ind., 116 cents per net ton, subject to Ex Parte 162 increase.

Docket 84303 (2)—Establish on stone, crushed, in bulk, in open-top cars, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Melvin, O., to Greensburg, Ind., 127 cents net ton, subject to Ex Parte 162 and 166 increases.

ILLINOIS FREIGHT ASSOCIATION DOCKET

Docket IRC 511-644—(A) Stone, viz.: stone, ground or pulverized, crushed or rough quarried; also strippings of stone quarries, in straight or mixed carload, minimum weight 90 percent of marked capacity of car, except that when cars are loaded to full cubical or visible capacity, actual weight will apply, but not less than 60,000 pounds, except as otherwise specifically provided.

(B) Agricultural limestone, also ground limestone dust and limestone, ground, carload, minimum weight 90 percent of marked capacity of car, except that when cars are loaded to full cubical or visible capacity, actual weight will apply but not less than 60,000 pounds. From Crafton, Illinois.

To (representative)	Proposed Rates *	†
Caseyville, Ill.	94	80
Trenton, Ill.	105	80
Flora, Ill.	119	99
Altamont, Ill.	124	122
Norris City, Ill.	133	122
Tuscola, Ill.	146	146
Springfield, Ill.	...	160

*Crushed stone; †Agricultural limestone.

Present rates—None in effect.

ILLINOIS FREIGHT ASSOCIATION DOCKET

Docket IRC 511-645—(A) Stone, viz.: stone, ground or pulverized, crushed or rough quarried; also strippings of stone quarries, in straight or mixed carload, minimum weight 90 percent of the marked capacity of car, except that when cars are loaded to full cubical or visible capacity, actual weight will apply, but not less than 60,000 pounds, except as otherwise specifically provided.

(B) Agricultural limestone, also ground limestone dust and limestone, ground, carload minimum weight 90 percent of the marked capacity of car, except that when cars are loaded to full cubical or visible capacity, actual weight will apply, but not less than 60,000 pounds.

From Grafton, Ill., to stations on the Wabash Railroad in Illinois:

To (representative)	Proposed rates *	†
Bement, Ill.	133	112
Sangamon, Ill.	133	107
Decatur, Ill.	108	107
Marblehead, Ill.	164	138
Gibson City, Ill.	171	...
Mt. Olive, Ill.	89	80
Sullivan, Ill.	161	121

*Crushed stone; †Agricultural limestone.

Present rates: None in effect.

NEW ENGLAND FREIGHT ASSOCIATION DOCKET

Docket 69991—(1 A-R)—To revise rates on lime, common, hydrated, quick or slacked, carload minimum weight 30,000 pounds. Group A—minimum weight 50,000 lb.; Group B—Present.

	Rates in cents per ton of 2,000 lbs.			
From Berkley, R.I., to	A	B	A Proposed	B
Brattleboro, Vt.,				
Putney, Vt.	$3.19	$2.53	No change	
Westminster, Vt.	3.19	2.53	$3.30	$2.64
From Canaan, Conn., to	A	B	A	B
Brattleboro, Vt.,				
Putney, Vt.	3.41	2.75	3.19	2.53
Westminster, Vt.	3.41	2.75	No change	
From Lee, Mass., to	A	B	A	B
Brattleboro, Vt.,				
Putney, Vt.	3.19	2.53	3.08	2.42
Westminster, Vt.	3.19	2.53	No change	
From West Stockbridge, Mass., to	A	B	A	B
Brattleboro, Vt.,				
Putney, Vt.	3.19	2.53	3.08	2.42
Westminster, Vt.	3.19	2.53	No change	

Reason: Proposed revision is to place rates on the correct basis, that is, 120 percent of docket 16170 scale.

WESTERN TRUNK LINE NEW APPLICATIONS

Docket E-41-898—It is proposed to establish on ground or pulverized stone, minimum weight, closed equipment, marked capacity of car, from Green Bay, Wis., to Minneapolis, Minnesota. Transfer and St. Paul, Minn., $1.90 per net ton, not subject to Ex Parte 162 increase.

NEWS OF CONCRETE MANUFACTURERS

12-Acre Kansas City Site Bought by Carter-Waters For Future Home Base

The Carter-Waters Corporation of Kansas City, Mo., has announced the acquisition of a 12-acre tract in that city for the further development of its facilities. According to an announcement made by Albert R. Waters, president, all of the Carter-Waters operations except a new Haydite plant near New Market, Mo., soon will be shifted to the new location.

It was revealed that the first unit to be constructed on the new property will be a plant for the production of Haydite concrete blocks. Gradually the present operations of the firm will be transferred to the new location. The Haydite aggregate and block plant at 32nd Street and Roanoke Road will continue operating there for at least another year.

Opening of the new Haydite aggregate plant at New Market is expected to be announced in the near future.

Concrete Masonry Association Hears Lone Star President

Members of the Nebraska Concrete Masonry Association met recently at the Lincoln hotel in Lincoln to hear an address by Mark H. Small, vice president of the Lone Star Cement Corp., Kansas City, Mo., who pointed out that concrete masonry today is a "very highly technical and industrial product made in plants with modern machinery."

"The problem of this group is not only to maintain quality products but to continue to produce high class masonry units which the building construction public will continue to use with full confidence," Mr. Small declared. He stated that concrete masonry products have had a smaller increase in price than any other building material, and urged the Nebraska manufacturers to publicize the fact that these products are still selling at the 1941 OPA level.

Simplified Practice Proposed For Pipe Reinforcement Fabric

A proposed *Simplified Practice Recommendation for Welded Wire Fabric Reinforcement for Concrete Pipe* has been submitted to producers, distributors and users of this material for approval, comment, or both, according to an announcement of the Commodity Standards Division of the National Bureau of Standards.

This fabric is used to reinforce concrete sewer and culvert pipe, and is made by spacing longitudinal and transverse wires at regular intervals and welding them together where they cross to form rectangular openings. It is supplied to concrete pipe manufacturers in rolls of 150 to 300 feet. The proposed recommendation gives the area of longitudinal wires per linear foot of fabric, and the spacing and gauge of longitudinal and transverse wires. Sketches are included to show how the area of circumferential reinforcement is determined and the location of the longitudinal and transverse wires in place in a pipe.

The proposal lists 45 styles of fabric, in place of the 311 styles which an industry survey disclosed were used. If generally accepted, the simplified list will represent a reduction of 266 styles, or approximately 86 percent. It is estimated that the 45 styles recommended will satisfy 90 percent of the demand for welded wire fabric reinforcement.

If generally approved as submitted, or as adjusted in accordance with suggestions which may be received, it will be promulgated and issued in printed form.

Mimeographed copies of the proposed recommendation may be obtained from the Commodity Standards Division, National Bureau of Standards, Washington 25, D. C.

George S. Hayde, former secretary-treasurer of the American Aggregate Company of Kansas City, Mo., died in a hospital in that city after an illness of two years. He was 59 years old.

Coming Events

January 12-16, 1948—Cleveland. Second National Materials Handling conference and exposition, Public Auditorium.

January 21-23, 1948 — Cincinnati. 18th annual convention and exhibit, National Ready Mixed Concrete Association, Netherland Plaza Hotel.

February 23-26, 1948 — Denver. 44th annual convention and exhibits, American Concrete Institute, Shirley-Savoy Hotel.

February 26-28, 1948—Roanoke, Va. Annual convention, Sand-Lime Brick Association, Roanoke Hotel.

March 1-3, 1948—New York. Annual convention, National Concrete Masonry Association, Hotel New Yorker.

March 11-13, 1948—New Orleans. 40th annual convention, American Concrete Pipe Association.

Tri-State Flexicore Co. Formed to Distribute Precast Concrete Slabs

The Tri-State Flexicore Company has been organized to distribute precast concrete construction in the form of hollow slabs up to 22 feet in length and suitable for roofing or flooring.

The slabs will be manufactured by the P. W. Gwyenne Company, Camden, O., under licenses granted by the Flexicore Company of Dayton, O. Production is expected to begin about December 15.

Demand for Concrete Pipe Necessitates Plant Expansion

Increased demand for concrete pipe in the Fresno, Calif., area has resulted in an extensive expansion of facilities at the Jourdan Concrete Pipe Company's plant. Four machines are now in continuous operation, turning out pipe for irrigation, sewer and storm drainage, as well as culverts for the state highway and county departments.

The company is owned by Harold W. Chutter, president, Mrs. F. T. Bradford, his sister, and I. Jourdan. Mr. Jourdan, founder of the firm, has now retired from active participation in the business.

Redicrete Units Produced At Waterbury R.M.C. Plant

Smooth-finish cinder blocks known as "Redicrete" now are in volume production at the plant of the Waterbury Ready Mixed Concrete Company in Waterbury, Conn. Daily production is in excess of 5,000 high-strength units. Almost complete mechanization of the plant cuts human labor to the minimum.

Officers of the company include the following: J. F. Smith, president; Joseph S. Barbara, vice-president; Benjamin Chatfield, treasurer; Harold W. Brown, secretary; Joseph DeLauretis, manager.

Mathias N. Quint has been appointed assistant to H. C. Shields, division sales manager for Marquette Cement Manufacturing Company at the Marquette sales office in St. Louis, Mo. Mr. Quint succeeds K. P. Hackmann, who has resigned to enter the service of the Federal Bureau of Investigation.

L. E. Harrington was recently promoted to the position of national sales director of the E. P. Barber Company, Bloomington, Calif. The firm manufactures the Bartile Concrete Tile Roofing Machine.

Universal Pipe Personnel from Eight States Hold Conference

Sales representatives, managers and officials of 15 Universal Concrete Pipe Company plants in eight states attended the first annual two-day sales conference in Columbus, O., on October 24 and 25.

Business sessions that dealt with sales, inventory and sales charts, machinery sales, reports, credits and collections, and advertising were attended by more than 50 persons, who came from Alabama, Georgia, New Jersey, New York, Ohio, Pennsylvania, Tennessee and West Virginia.

An address by H. X. Eschenbrenner, president of Universal, at the opening session highlighted the conference. He emphasized the need for expanded sales efforts and improved public relations by Universal employees.

"Our job is to prove that we are salesmen, or "business builders' if you please," Mr. Eschenbrenner said. "Know your product, plan your time, make every minute count. Organize and systematize your thinking and your efforts. Mix all of this with vision, and the world is yours."

He pointed out that the "bigger man you are in your community, the better salesman we can make you."

"Sales," he said, "is the life blood of any business. If a man is not sales-minded, promotion-minded, advertising-minded, he'd better get out of business."

During his 40 years in the business world, Mr. Eschenbrenner said he found that sales are as basic as production. He has been with Universal since its inception 27 years ago.

"Our production ability right now is better than our selling," Mr. Eschenbrenner stated. "As we come of age, I say let's forget production a while and start talking salesmanship, because if my years of experience have taught me anything, it's this—if you sold the pipe, in spite of hell and high water, we got it made."

He stressed the need for advertising, which he described as a "new-found tool to supplement, not supplant, your sales efforts."

"The greatest improvement we can now make is to bring to our business . . . . the great principles of advertising and selling that have brought success to other industries," he said.

According to Mr. Eschenbrenner, the new job of better advertising and salesmanship in the concrete pipe industry is to create demand. Advertising and salesmanship are "twin brothers, with this difference — salesmanship is advertising plus getting the order signed."

"The business we develop as a result of our effort is the only kind that will stay with us in the future," he added. "Part of that new effort is planned advertising, and part of it is organized, systematized, intensive and aggressive sales effort."

Guest speakers on the two-day program were Harold K. Schellenger, director of the Byer & Bowman Advertising Agency public relations department, Columbus, O., and Professor H. R. Cotterman of Capital University.

Mr. Schellenger told the group that business firms are growing more sensitive to public attitudes "as evidenced by the tremendous growth of opinion and consumer surveys."

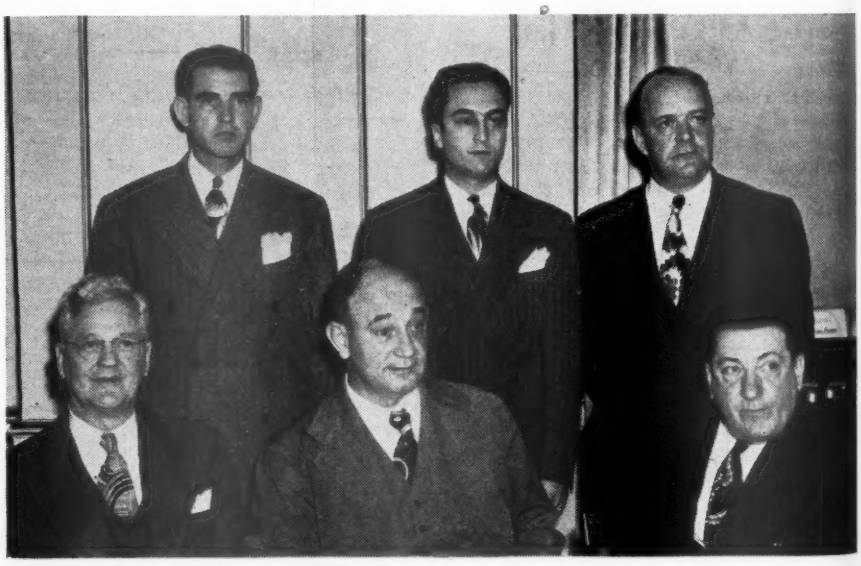
"Where formerly the salesman's main job was to bring in the orders, he now becomes more than ever the eyes and ears of management in the field," he said. "Along with orders, it is now his job to bring in also intelligent reports of trends and attitudes affecting the business in which his firm is engaged."

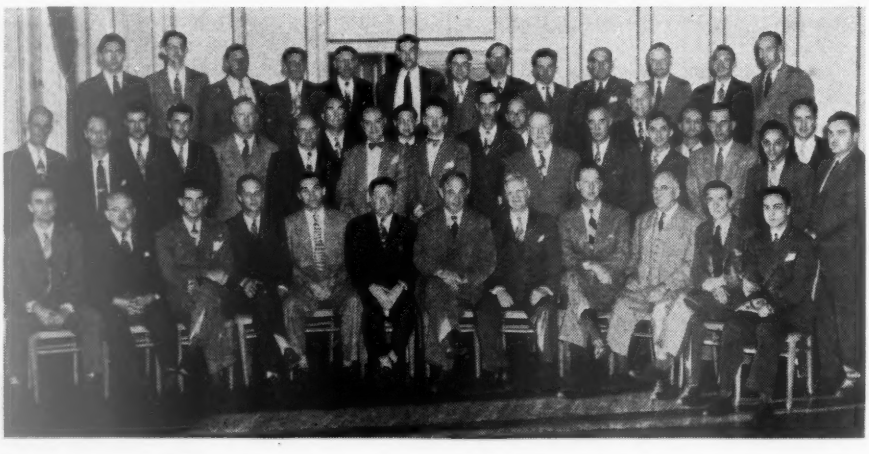
Speakers during the business sessions included the following: J. M. Millious, advertising and sales promotion manager; W. E. Bishop, treasurer; V. M. Brotton, comptroller; E. M. Rymer; Walden Wren, production engineer; and Mr. Eschenbrenner.

Service awards were made to 20 persons at the dinner. Frank Emch of Pittsburgh received a pin for 23 years' service, the longest of any employee at the meeting.

George Malfregeot, vice-president in charge of the Syracuse, N. Y., district office, and Harry Leuliette, vice-president in charge of the Eastern sales division, New York City, attended the meeting.

Others who were present included: Myron Miller and Harold T. Leuliette, Norristown, Pa.; Sam Buderman, Wheeling, W. Va.; Nelson Krenzer and Larry E. Barrett, Rochester, N. Y.; W. C. Louis and W. R. Davis, Atlanta, Ga.; Earl Chidester and Earl Brane, Clarksburg, W. Va.; Paul Blount and Larry Miller, Zanesville, O.; Russ E. Hutchison, New Martinsville, W. Va.; Elmer Leuliette, Kenville, N. J.; George Sims, Decatur, Ala.; John Harris, Dothan, Ala.; John Adamas, Nashville, Tenn.; George Pullin, Syracuse, N. Y.; George Brooks and Frank Emch, Pittsburgh, Pa.; and W. C. Keller, Port Washington, N. Y.





• Six of the company officials are pictured above. Front row, left to right: Harry Leuliette, vice-president in charge of the Eastern sales division, New York City; President H. X. Eschenbrenner, Columbus, O.; George Malfregeot, vice-president in charge of the Syracuse, N. Y., district office. Back row, W. E. Bishop, treasurer, Columbus; V. M. Brotton, comptroller, Columbus; Grayum Bing, president of the Concrete Pipe Company of Ohio, an affiliate.

• Left: Most of the Universal Concrete Pipe Company officials, plant managers and sales representatives who attended the first annual sales meeting in Columbus, Ohio, are pictured above.

Florida Hurricane Fails To Weaken Structures Built of Concrete Masonry

The following communications tell an interesting story.

The Concrete Manufacturer
538 South Clark Street
Chicago 5, Ill.
Gentlemen:

In reply to your letter of September 19th, I am pleased to say that the concrete block structures stood up very well under the hurricane. Practically no damage at all was done to buildings constructed of concrete blocks. The only buildings that were damaged were those partially completed where the masonry walls were left standing without the concrete tie beam in place—and in many instances these walls stood up under the terrific force of the wind which blew in excess of 125 miles per hour. This storm is adequate proof that concrete block construction is the best type of construction for Florida or any vicinity that is subject to high winds. I am sorry that I cannot enclose any pictures as I have none available.

Yours very truly,
Charles Giller
Concrete Materials Company
West Palm Beach, Fla.

The Concrete Manufacturer
538 South Clark Street
Chicago 5, Ill.
Gentlemen:

In accordance with your request for information regarding the effect of our recent hurricane on buildings of concrete block and concrete product construction, I am sure you will be interested to know that I have made a very complete survey of the damage done in this area and was unable to find one building where concrete blocks were used that was damaged in any way.

There were a number of concrete buildings that were under construction that were damaged, but of course it would not take a hurricane to damage them, they could have been pushed over very easily with a truck.

Enclosed are two photos that I secured from the local newspaper.

Photo Number 1 is a small beach hotel, which normally sat back 150 yards from the ocean. The ground level was originally up to the bottom of the building and terraced off gradually down to the beach. It was very elaborately landscaped on the ocean side with shuffleboard courts and sun deck. As you will notice the force of the storm washed the ground out from under the building and left it standing on its reenforced concrete pilings.

Altho the top portion of this building appears to be frame siding, it is not, but is of poured concrete construction. This in my estimation is a prime example of the durability and resistance of concrete construction to the terrific force of water.

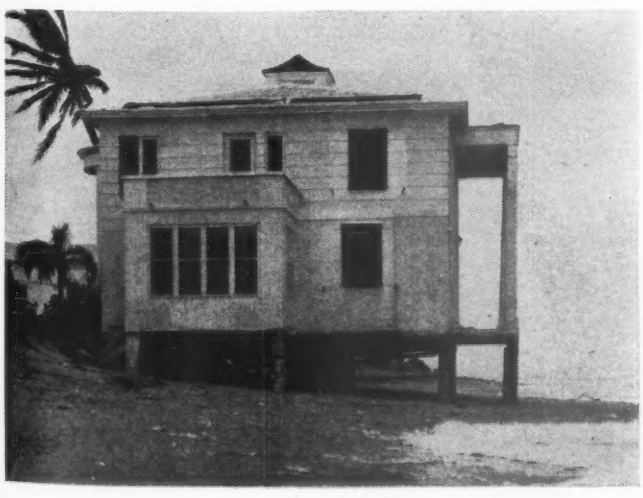
Photo Number 2 is another ocean front home of concrete block construction which, with the exception of the metal storm shutters, was practically undamaged, yet it took the full force of the storm for hours on end. This building was also elaborately landscaped and as you can see from the debris was subject to terrific pounding, not only from the ocean itself but the unobstructed winds of hurricane force. There was also a frame beach house that was completely washed away.

I might point out that the hurricane winds started out of the northeast about 4 p.m. on Tuesday and continued to increase until around 9 a.m. Wednesday, at which time it reached a velocity of about 140 miles an hour for over two hours. We then had a lull for about 50 minutes, at which time there was a very depressed and smothering feeling, in itself indicating danger. The winds started from the Southwest at a terrific rate of speed which equalled or even surpassed the blow we had from the Northeast. This continued at hurricane force until around 2:30, then gradually diminished over a period of about 48 hours.

Very truly yours,
R. G. Stevens

Fort Lauderdale Concrete Block Company

• Viewing a Sakrete trailer which has just delivered 1,000 sacks of Sakrete to a dealer are the following (left to right): Robert F. Porter, manager of the Sakrete plant of Harry T. Campbell Sons' Corporation, Towson, Md.; J. Walbach Edelen, John W. Edelen and J. W. Cox, of the Stebbins-Anderson Company, the satisfied customers. Sakrete, as the sign on the trailer proclaims, is ready-mixed concrete in paper sacks, requiring only the addition of water. Trailers like this one make daily deliveries throughout Maryland, Virginia, West Virginia, Pennsylvania, Delaware and New Jersey. The story of Sakrete was first told in the March, 1938, issue of Pit and Quarry.



• Left: This ocean-front house remained unharmed by the wind and waves, although its terraced grounds were washed away, leaving it perched on its pilings.

• Below: Another home which showed no trace of damage to its concrete masonry walls, although it took terrific punishment from high seas and winds.

Cinder Backup Block Used In World's Largest Housing Project

another P and Q exclusive

IN New York City another outstanding construction achievement is rapidly nearing completion. This time it is not one of those familiar skyscraping business towers, but a housing project consisting of three units, a super-modern city within old Manhattan that, eventually, will accommodate approximately 35,000 people.

By GEORGE W. HOFFMANN
Consultant on
Concrete Products Industries

The Metropolitan Life Insurance Company, the world's largest life insurance company, is investing here some of its liquid surplus, converting blighted slum areas that formerly housed less than 4,000 families into a modern paradise of healthful living quarters. This modern city is taking into consideration every angle on living comfort at the lowest rentals known in metropolitan New York.

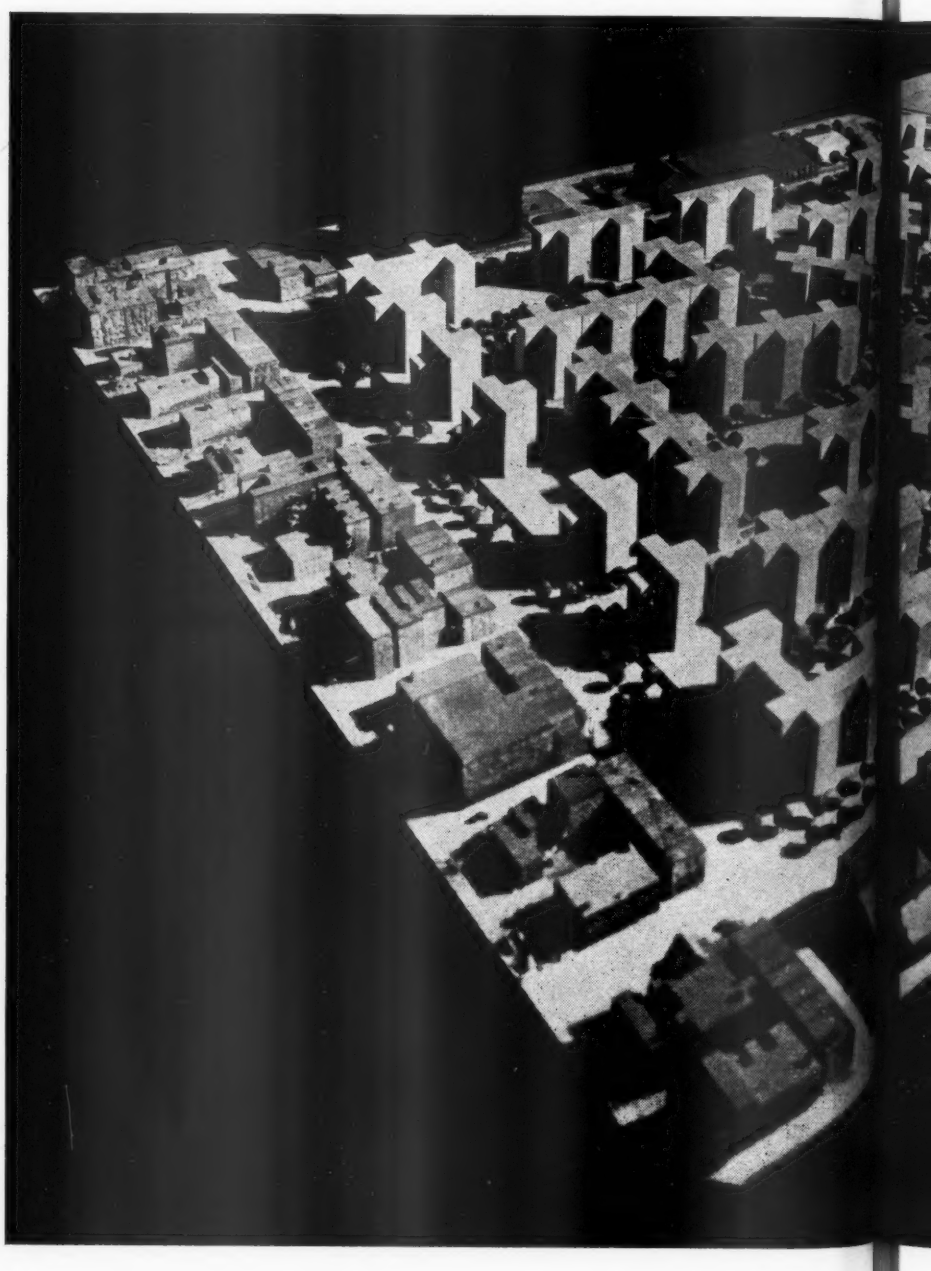
The two principal projects are "Stuyvesant Town" and "Peter Cooper Village." They are adjoining and cover New York's East Side from 14th to 23rd streets, rising from the shores of the East River toward the office skyscrapers of midtown Manhattan.

Stuyvesant Town alone will consist of 35 fireproof, insulated apartment buildings, 12 or 13 stories high, with a total of 8,755 modern apartments, housing approximately 24,000 people. They will pay from $50.00 to $90.00 a month for one- or three-bedroom apartments, with living-dining room and bathroom, as well as a modern kitchen, with gas and electricity all included.

Peter Cooper Village consists of twenty-one buildings, 15 stories high, containing 2,500 apartments to house about 7,000 people.

The third and smallest unit, Riverton, will house approximately 4,000 persons.

To build in accordance with



• Right: This is not a child's lock-block set nor an outsize puzzle, but an overall view of the model of Stuyvesant Town, one of the three huge housing projects which when completed will house 35,000 New Yorkers. Stuyvesant Town alone will have 35 units (count them!), sheltering approximately 24,000 persons. Its smaller neighbor, Peter Cooper Village, will rise on a site adjacent to the Town and will accommodate about 7,000 persons. The project, financed by the Metropolitan Life Insurance Company as an investment, will utilize 4-in. cinder backup block for all outside brick walls and also for partitions and elevator shafts.

• Below: George W. Hoffmann with the 4-in. cinder block used in the Metropolitan Life Insurance Company's construction project, which includes Stuyvesant Town, Peter Cooper Village and Riverton.

• Above, left: A view of Peter Cooper Village under construction.
• Above: Cinder block (center) and brick (left) on the construction site. Note the orderly arrangement of stacking block.

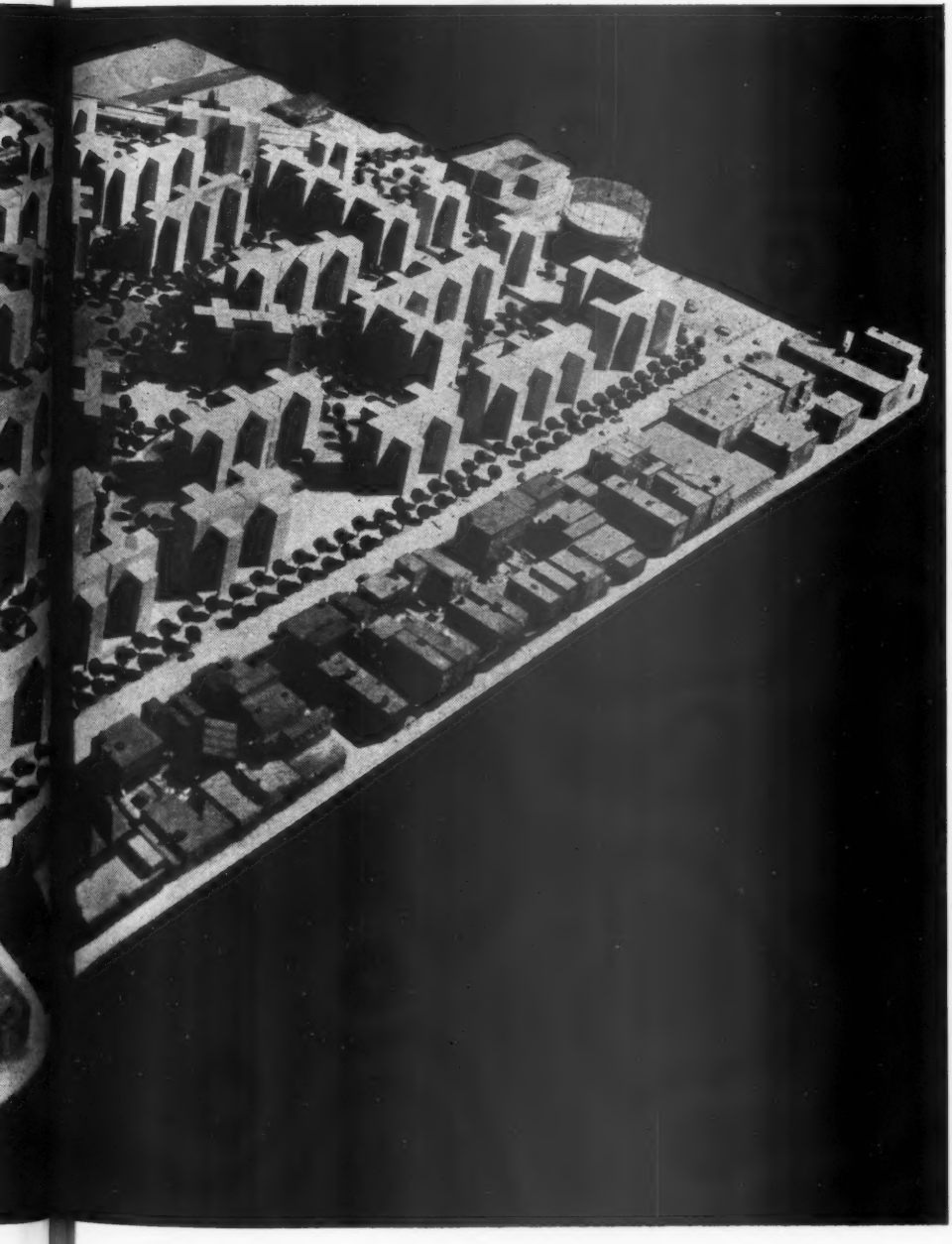
Metropolitan Life Insurance standards at a time when real estate, labor and material costs are the highest in the history of the United States required careful planning and most efficient construction methods.

For health and comfort, outside wall insulation is assured by the use of 4-in. cinder backup block against a 4-in. brick wall. These outside walls are set into the rigid steel frame structure throughout the various projects. Inside or partition walls are also of 4-in. hollow concrete cinder block, and all elevator shafts are built with the same. Several million units are being used.

Mason's construction scaffoldings are suspended from steel beams on wire ropes. They rise uniformly all around the huge buildings for precisely-timed brick and block laying.

Before the masons arrive on location, face brick and backup block are stacked in measured piles, properly spaced and handy to reach. Scaffoldings are protected with a wire-mesh railing.

Proof of the effectiveness of this most efficient building method is shown in the fact that, on Stuyvesant Town, steel began to rise on 14th Street in August, 1946; today, some of the buildings are already occupied, and others are in their final stages of completion. Thus, mass housing, made possible through far-sighted life insurance executives and their able technical and architectural assistants, is not only relieving the grave housing shortage but is also contributing an entirely new outlook on modern housing.



• A closeup view of the 4-in. back-up cinder block on the job. This type of construction will be used in all three housing units.

Willard Ready-Mixed Concrete Co. Develops Three-Piece Portable Plant

another ON THE SPOT report

PORTABLE equipment designed to enable the production of ready-mixed concrete with a minimum of investment is being used with singular success by the Willard Ready-Mixed Concrete Co. of Lynwood, Calif.

No overhead bins or batchers are required, aggregates being stock-

By HARRY F. UTLEY

piled on the ground. Willard-built mixers are small, 2½-cu.-yd. capacity drums which mount on popular-priced short-wheelbase 1½-ton trucks that can get into the tight places that the larger commercial type units cannot negotiate.

Because of the success of the system, Carl L. Willard, president of the company, has begun commercial production of the equipment and has also made the necessary arrangements to market the various units.

The system includes three basic parts (1) a "Speed King" mobile self-loading weigh batcher, (2) a portable inclined belt-coveyor which carries the batch from the weigh batcher to the mixer drum, and (3) the 2½-cu.-yd. truck mixer itself.

The weigh-batcher operator drives the unit to the aggregate piles, where the front-end-mounted bucket loader quickly puts the specified sizes and quantities into the hopper of the

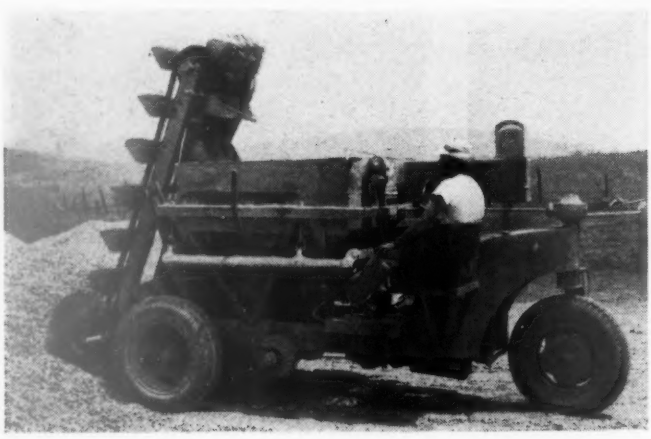
(*Continued on page* 136)

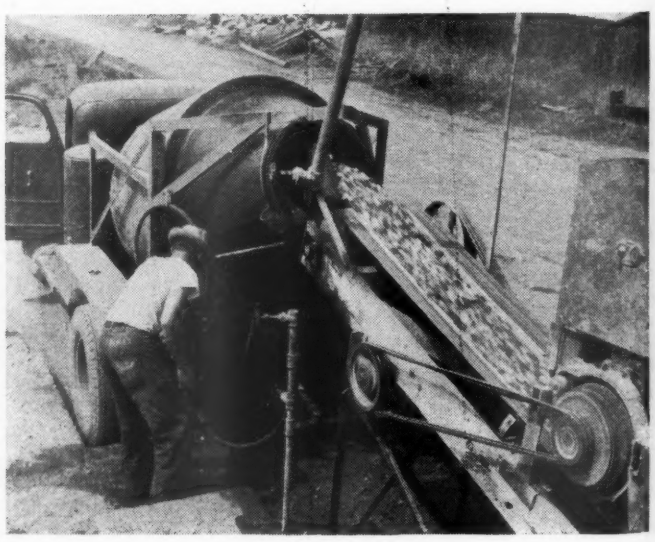
• The complete set-up of the portable ready-mixed concrete plant developed by the Willard Ready-Mixed Concrete Company, Lynwood, Calif.

• One of the 2½-cu.-yd. truck-mixers with the 9-ft. swivel discharge chute in position.

• Right: The portable conveyor is operated at such velocity that the dry batched ingredients are thrown cleanly into the drum on the truck mixer.

• Below: The mobile weigh batcher with its scales and tell-tale dial at the driver's right. The bucket loader on the front end rapidly fills the batching hopper. A quick cut-off functions when the desired weight has been reached.





Company Engineer Well Satisfied With New Fly Ash Block

By EDWARD BRUNENKANT

another ON THE SPOT report

AFTER exhaustive experimentation, the Neff Concrete Products Co. of Danville, Ill., became one of the industry's first users of fly ash in the manufacture of concrete block. Convinced that the addition of fly ash would materially improve their concrete products, the officers began in April of this year to add fly ash to all their mixes, hoping that the somewhat darker color of the new block wouldn't evoke criticism from their customers. To their delighted surprise, most of their clients seemed to prefer the darker fly ash block, and for the first few weeks demand far exceeded production.

Fly ash is the unburned residue formed in the combustion of powdered coal at high temperatures. (See PIT AND QUARRY, May, 1947, page 157.) This by-product is collected in Cottrell precipitators and without further processing is shipped to the consumers. Combined in limited proportions with portland cement, fly ash imparts desirable strength characteristics to the concrete.

The company entered the concrete products field in 1939 with the manufacture of burial vaults. In 1940, foreseeing an unprecedented demand for construction materials, the owners bought a small-capacity block machine which they traded in five years later for a larger and more productive machine—a Besser Vibrapac. In February of this year the Neff company added a McCracken Model T pipe machine to the plant facilities. For the present, the pipe machine is operated intermittently in an effort to build up the pipe inventory, but plans are definitely set for a daily production schedule.

• A general view of the Neff Concrete Products Company, Danville, Ill. The 153-ft. belt conveyor feeds into a homemade 2-compartment wooden bin.

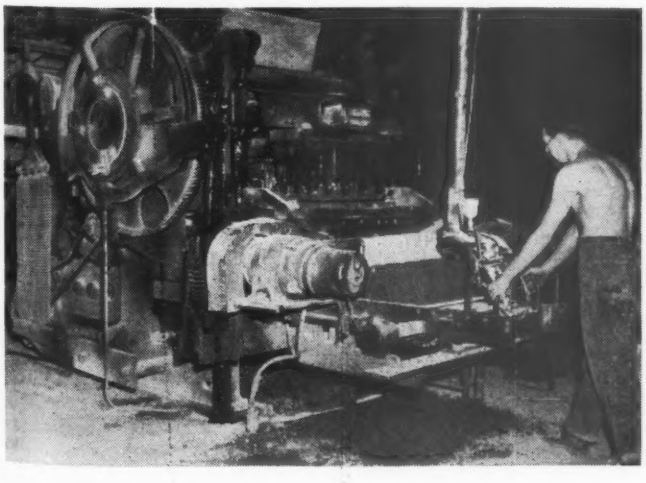
Aggregates are shipped to the plant in bottom-dump cars and discharged into a feeder pit beneath the tracks. There is adequate room alongside the railroad spur for 1000-ton stockpiles of sand and gravel from which material can be moved into the undertrack bin with a ¾-cu.-yd. Scoopmobile. A 24-in. by 153-ft. belt conveyor, built by the Atlas Conveyor Co., elevates the aggregates to a 140-ton, 2-compartment wooden bin. This bin, along with other plant innovations, was designed by Pete Neff, secretary-treasurer of the company, and one of the small but growing number of graduate engineers who are employed full time by concrete products manufacturers.

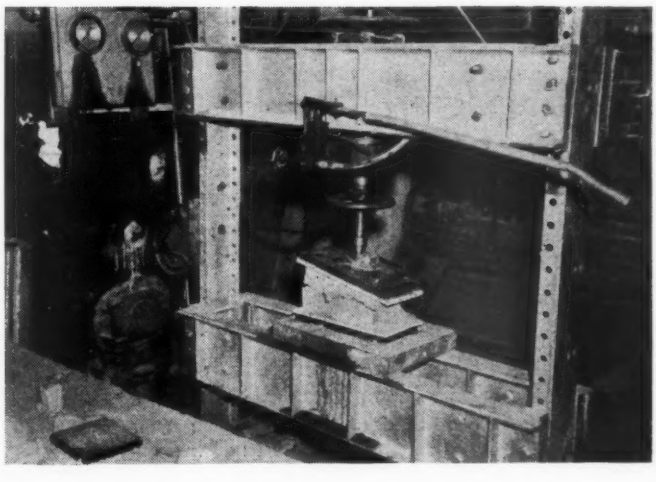
Directly below the bin is a Johnson weigh batcher, which charges both the 50-cu.-ft. Besser mixer for the block plant and the 30-cu.-ft. C. & G. mixer for the pipe plant.

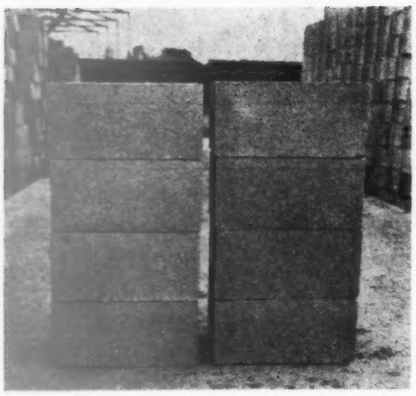
Fly ash is added to the block mix in the proportion of 3 bags of cement to one 100-lb. bag of fly ash. To keep down the dust, both the cement and the fly ash are dumped into a separate compartment of the skip hoist, elevated, and discharged simultaneously with the sand and

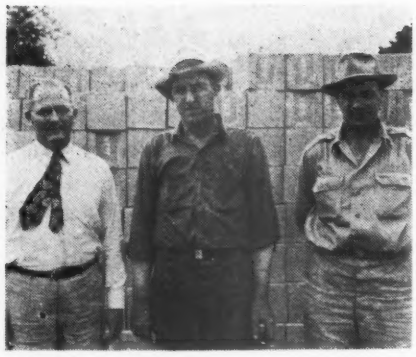
• Below, left: With effortless, deliberate movements, the operator guides the offbearer under the loaded flat pallet. This block machine can produce 600 modular-sized blocks per hour.

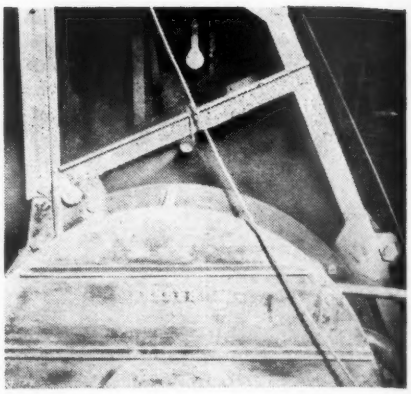
• Right: This home-made compression machine, despite its unaesthetic appearance, has been invaluable in maintaining a daily check on the quality of the company's products. Note the synthetic board used to cap the test block.











• Left: Color gradations between a fly-ash and a standard concrete block are not as obviously perceptible as one might think. Can you tell the difference?

• Center: Standing before a stockpile of their individually stencilled blocks are the owners of the Neff Concrete Products Company. Left to right: W. A. Neff, president; Fred Stephan, vice-president; G. M. Neff, secretary-treasurer.

• Right: Dust from the 15-cu.-ft. mixer is absorbed by a blanket of steam.

gravel into the Besser mixer. This mixer is on the mezzanine floor above the block machine. For the pipe plant, fly ash is added to the mix in the ratio of one bag of ash to 6 bags of cement.

These ratios of fly ash to cement have resulted in increased strengths amounting to approximately 20 percent at the end of 24 hours. Although no comprehensive tests have yet been made, the plant engineer feels that this early increase in strength holds for greater ages.

To keep down the dust generated as the mixer discharges into the block machine hopper, Pete Neff designed and installed a rather neat device. It consists of a perforated pipe suspended laterally above the mixer. As the mixer is emptied, the operator opens a steam valve which spreads a blanket of steam through the pipe over the rising dust.

The modular-sized green blocks, stacked in 72-unit steel racks, are moved into the curing rooms with an Erickson platform lift-truck. Each one of the three curing tunnels will hold 20 racks. The blocks are soaked with live steam for a period of ½ to 1 hour at 160 to 180 deg. F. The temperature is maintained for 20 additional hours with steam radiators. The blocks are yard-cured for three weeks.

Three 13- by 95-ft. kilns are provided for the curing of pipe. Steam is injected from both sides, instead of from one side, as in the block plant. The pipe is soaked with live steam at alternate 3-hour intervals for 2 days. Temperature is held between 140 and 150 deg. F.

Blocks are checked twice a day on the homemade 140,000-lb. compression tester, while one test is made for each run of the pipe. The test blocks are capped with a Celotex board instead of the more usual plaster of Paris cap. On the mezzanine floor of the main building is a small laboratory with facilities for running moisture tests on aggregates, moisture content of blocks, and shrinkage and drying tests.

Besides Pete Neff, other officers of the company include W. A. Neff, president, and Fred Stephan, vice-president.

Willard Ready-Mix

(*From page* 134)

weigh batcher, a 3-beam scale with over-and-under indicator accurately measuring the amount of each size by weight.

The lower end of the portable conveyor, 20-in. wide on 20-ft. centers, slips under the discharge gate of the weigh batcher (or the self-powered batcher is driven over the end of the conveyor), the required amount of cement is added, and the batch is discharged at the upper end of the conveyor into a waiting truck-mixer.

Willard open-end truck-mixers operate by power take-off from the truck motor and have spiral mixing blades, the revolution of the drum being reversed for unloading at the job. A 40-gal. pressure water tank and a 9-ft. swivel chute are standard equipment.

Mr. Willard is of the opinion that the equipment will be in great demand among smaller aggregates producers as it will enable them to deliver ready-mixed concrete without the necessity of making a large investment, since all three pieces of essenial equipment cost less than do conventional overhead bins alone.

Old timers in the transit-mix business will recall that Mr. Willard was one of those who pioneered the truck-mounted mixer in the early twenties, having been granted one of the first patents ever issued on this type of equipment. Shortly afterward he assigned the patent rights to a large manufacturing concern on a royalty basis.

Subsidiary of Barge Concern To Operate Concrete Plant

By forming a new concern—the Willamette Hi-Grade Concrete Company—the Willamette Tug & Barge Company has entered the concrete business in Portland, Ore. The new firm is the barge company's wholly-owned subsidiary, according to Arthur A. Riedel, president and general manager of both organizations.

Hi-Grade has four Federal trucks mounted with Jaeger mixers and will deliver both dry-batched and transit-mixed concrete throughout the area. A hopper has been erected for storing cement, which is received from the Oregon-Portland Cement Company of Oswego, Ore. Aggregate consists of material dredged from the Willamette River.

Concrete Workers Return After Seven-Week Strike

Work stoppages at two concrete plants in Minneapolis, Minn., ended after seven weeks when employees of the Ready-Mixed Concrete Company and the Twin City Ready Mix Concrete Company returned to their jobs upon being promised a pay raise of 20 cents per hour.

The signing of new contracts with the AFL local was delayed pending a ballot on the union's request for a union shop. The union asked for an hourly wage of $1.40, but settled for $1.31, with time and a half for all hours worked daily over 10 and double time for all over 12.

On land leased from the Laconia, N. H., airport, Harold Tefft of that city is operating a ready-mixed concrete plant which has a daily capacity of 125 tons. The plant was brought to Laconia from Presque Isle, Me., where it had been used in the construction of an army airport.

Plasticrete's Fine Laboratory Marks New Era in Concrete Block Industry

THE Plasticrete Corporation of Hamden, Connecticut, one of the country's leading manufacturers of concrete masonry units, for the past 18 months has been operating a well-equipped testing and research laboratory in conjunction with its block plant. This important development reflects a long-felt need among the company's officials and technicians for a systematic scientific program in the interest of improving quality, modifying plant procedure and developing new products. Although the work of the laboratory will be closely integrated with the operations of the Plasticrete plant, the company hopes that studies carried out over a period of years will ultimately benefit the entire concrete masonry industry.

By C. M. ROLLINS
Laboratory Director
Plasticrete Corp., Hamden, Conn.

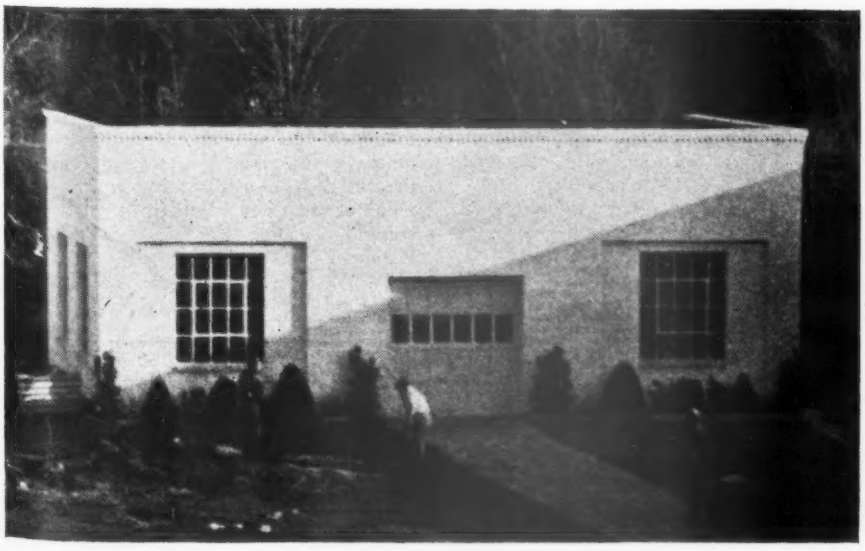
The laboratory is housed in a new concrete masonry building, measuring approximately 30 by 40 feet, and it is so well equipped that Plasticrete units can be tested there for almost all A.S.T.M. specifications. Numerous cement laboratories were visited and studied to make certain that only the best equipment was installed for checking the quality of masonry units and to assure that the proper instruments were included to enable the company to conduct a very thorough research program. This was accomplished at a total expenditure of approximately $30,000. To utilize fully these facilities, the laboratory has been staffed with two to three men whose full time is devoted entirely to increasing knowledge through research.

• A general view of the laboratory maintained by the Plasticrete Corporation, showing the director, Carl M. Rollins (left), and his assistants. Note the refrigeration unit in the center.

One of the most important features of the laboratory is its pilot kiln. This kiln is of sufficient size that a full rack of uncured blocks can be placed inside by a lift truck. These units are then cured under accurately controlled conditions varying only with the style of curing employed. By the use of thermocouples, recording percent of relative humidity instruments, and an arrangement for constantly weighing block while they are being cured, vital data have been obtained on methods of curing. The live steam temperature during the test is rigidly controlled at a predetermined rate by a Leeds-Northrup electronic instrument which eliminates any possible human error. The type of heat employed in curing is not limited to live steam, since the kiln is equipped with radiant heat coils of sufficient capacity to properly heat a five room house. In addition to this there has also been installed a circulating hot air system in the kiln which reaches a temperature of 250 to 300 deg. F. Means are also at hand for introducing hot or cold water in mist form for increasing humidity during curing.

The nucleus of the laboratory is the Baldwin Southwark compression machine. This machine, which is used in determining compressive strength, is a dual-dial, motor-driven instrument of 300,000 pounds' total load capacity, yet it is delicate enough to give the compressive strength of an extremely weak concrete cylinder by using a smaller 50,000-pound dial. Due to the importance of meeting A.S.T.M. requirements on compressive strength, it has been found that the majority of tests eventually require the use of this machine.

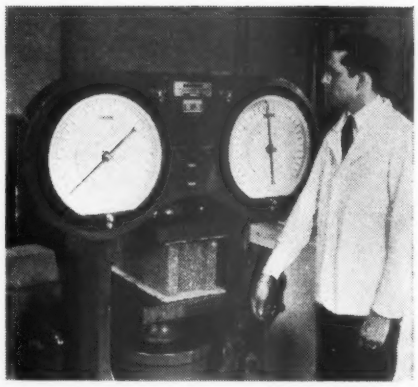
It would be impractical to elaborate on all of the laboratory equipment, but the items of most



• The laboratory is shown during the last days of construction, with workmen completing the landscaping. The structure is, of course, built of concrete masonry units.

importance are a Whittemore strain gauge, a deep freeze unit for freezing and thawing tests, drying ovens, muffle furnaces, cinder stain determination equipment, a fog room for moist curing, various types of concrete mixers, and other related equipment.

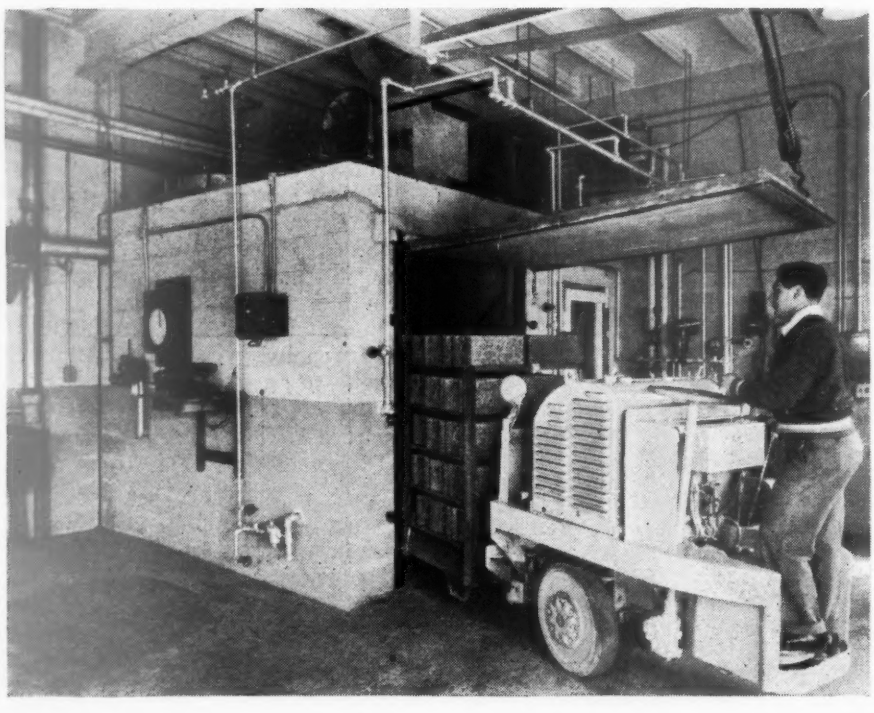
Although research does not daily produce results of a monetary value, the company feels that in the year and a half the laboratory has been in operation it is already well on its way towards paying for itself. Research in curing cycles, mixing procedure, types of cement, and the fineness modulus of aggregate, have produced results on which a definite financial value can be placed. These savings are actually only a by-product of the company's major interest, which is the quality of Plasticrete units. The responsibility for maintaining high quality rests solely with the laboratory, and no changes, however small, are made in production procedure without first obtaining sanction from the laboratory. This control is rigidly maintained by the daily routine of double checking the men assigned to see that the mix proportions are correct, that the texture and water content of mixes are ideal, and that curing temperatures are following a predetermined pattern. Samples of blocks made by each shift are selected at random each day and tested for compressive strength and moisture content. A report is made out each day by the laboratory showing the texture, general appearance, compressive strength and all points affecting the quality of the units. This report, submitted to the management, plant foreman, and superintendents, gives a clear picture of the day's production.



• A laboratory staff member conducting a test on a Plasticrete block to determine its compressive strength.

In addition to protecting the daily quality of plant production, the laboratory is constantly engaged in research to perfect the various phases of manufacturing. Any possible revision is checked innumerable times before being placed in operation. This same research is continually applied to other products of the company's manufacture such as sills, lintels, crypts, Plasticrete garden burners, Trax and other items. Although the laboratory has not been operated on a commercial basis, customer relationships have been improved by placing its facilities at the customer's disposal when desired.

• Here a load of block is being taken into the laboratory's pilot kiln for curing. The kiln temperature can be raised to 300 deg. F.



New Block Plants Opened By Three Michigan Concerns

Michigan towns report the launching of several new concrete products plants, among them the following:

At Kalamazoo the Thayer Brick Company is turning out about 15,000 concrete bricks a day. Russel Thayer, owner, founded the company because he thought something should be done about the high cost of home construction. The units are compacted under a pressure of 10,000 p.s.i. in a Jackson & Church brick press. Any desired color can be produced by the addition of mineral coloring matter to the concrete. Air-entrained cement is the one constant ingredient; the aggregate may be crushed limestone and graded sand, steel mill slag and sand or cinders and slag. If brick is wanted for ornamental purposes, crushed marble is used.

One of Saginaw's newer industries is the R. K. Block & Supply Company. Modern equipment has made possible a daily output of 4,000 blocks, although the top capacity is 600 per hour.

Elmer Kielinen and Ronald Keskey located their concrete block plant at Ishpeming on the site of an old mine. They remodeled the mine's electric and carpenter shop, a 30- by 90-ft. structure, and made it fireproof. Then a railroad spur was added to facilitate transportation. A capacity of 3,000 units per day is the management's aim.

Second Universal Plant Begins Production of Concrete Block

Concrete block production was begun recently at the Norristown, Pa., plant of the Universal Concrete Pipe Company, according to word from Harold J. Leuliette, Norristown plant manager.

One of 15 plants operated by the company, the Norristown facilities have featured the production of sewer and culvert pipe. Other Universal plants make concrete cribbing and pipe and block machinery. Several weeks ago the company's plant in Columbus, O., also began producing block.

Saticoy Rock Co. Old-Timers Feted for Service Records

Twenty-five years of service on the staff of the Saticoy Rock Company at Ventura, Calif., called for a special celebration recently. Lloyd Corser, general manager, and A. H. Stovall, manager of the ready-mixed concrete plant, were presented with watches by the management of the firm. Both men joined the company during the early days of its history.

W. W. Best is president of Saticoy and Fred W. Smith is vice-president.

G. J. Coriell, president of Peninsular Permastone, Tampa, Fla., has announced the opening of additional branches in Pensacola and Tallahassee. Other cities having offices of this company are St. Petersburg, Miami, Orlando, Ocala, Sarasota, Bradenton and Fort Myers.

Complete Line of Cinder Products Produced by West Michigan Operator

another ON THE SPOT report

IN these times of material shortages, many operators are plagued with a shortage of suitable aggregate. The William Moors Concrete Products Co. located in Fraser, Michigan, a suburb 10 miles north of Detroit, is fortunate in having contracted with the Detroit Edison

By ROBERT W. SPAKE

Company for a large portion of the cinders produced by its large electrical generating stations serving the Detroit area. Since the Moors company was among the very first users of cinders to deal with Detroit Edison, they have enjoyed amicable relations and a continued and steady supply of material, where other less fortunate companies have been forced to search diligently for aggregates.

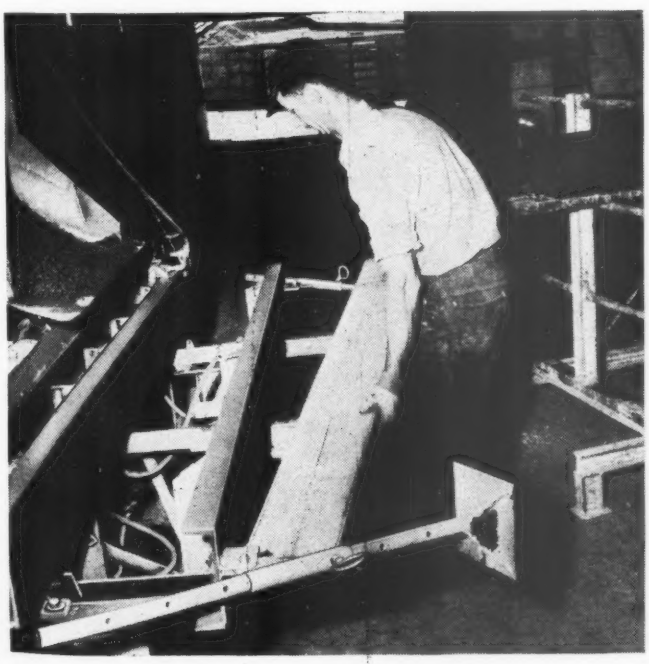
For a time the company used their own trucks to bring cinders to the company property, but later turned the haulage problem over to another firm.

Once in the yard, the cinders are handled by a Unit crawler-mounted crane with a ½-cu.-yd. bucket. This unloads the material to stockpiles, and loads it from them to company-owned Chevrolet trucks which shuttle it a short distance to the crushing and screening plant. Here a grizzly diverts any large pieces,

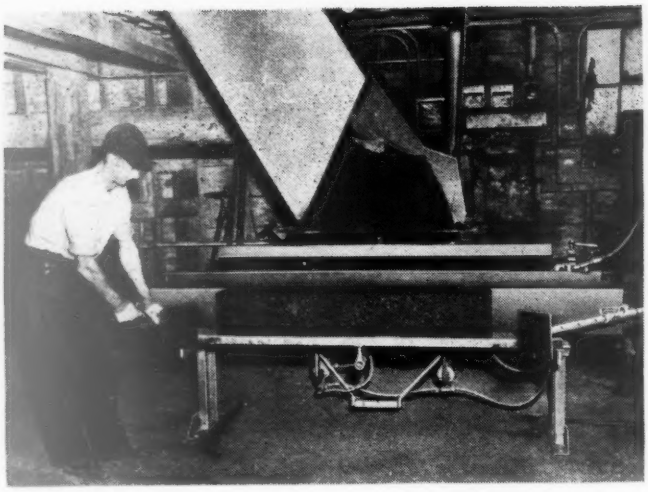
• The ½-cu.-yd. crane which unloads and loads cinders at the plant of William Moors Concrete Products. Note the size of the cinder pile. The truck and trailer combination (right) is bringing in more cinders from Detroit Edison.

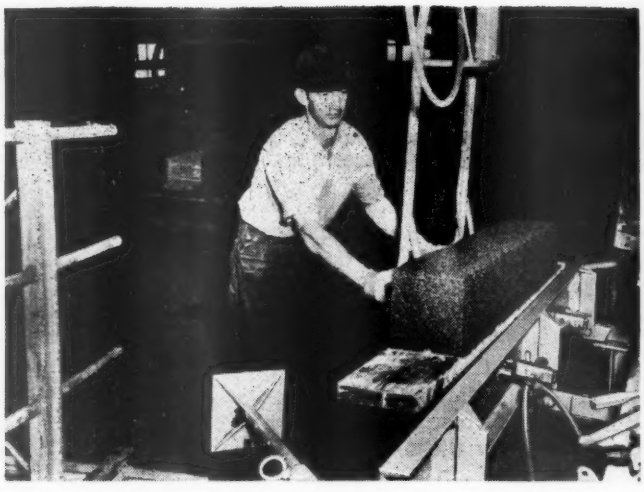
while the first crushing operation is performed by an Eagle hammermill, powered by a 25-hp. motor. Hammermill discharge falls onto a Barber-Greene belt conveyor, and is carried upward to a Simplicity 4- by 8-ft. vibrating screen. Material too large for use in products is not passed by this screen, and is diverted into a New Holland roll-crusher, driven by a 10-hp. motor through a gear reducer. A Barber-Greene bucket elevator takes material passing the screen, and the discharge from the roll crusher, from a belt conveyor which forms the bottom of a long surge bin directly beneath both of these items of equipment. The bucket elevator, in turn, feeds a 60-cu.-yd. surge bin above the cement mixer in the products plant.

Material taken from this bin goes to a Kent Stediflo continuous mixer. This machine automatically handles the operations of measuring, dry mixing, watering, wet mixing, and discharging. The actual mixing is done in a long trough, with the



• Left: The operator places the reinforced wood pallet in the lintel machine. • Below: One-half-inch reinforcing rods are placed in the lintel before vibration begins.





• Left: After vibration the adjustable end members of the form are swung out and away from the lintel.
• Right: The finished lintel is lifted, with the pallet, by an air hoist.

agitation being supplied by numerous chill-hardened paddles individually fastened to a square shaft. Cement and aggregate are admitted at one end of this trough through specially - designed hopper gates, which proportion the incoming material automatically. Water is added continuously to the dry materials after they are thoroughly mixed, and wet mixing continues as the material moves toward the discharge end of the trough. The output of correctly proportioned material can be instantly varied without stopping the mixer or altering the proportions, by moving a hand lever on a variable yoke.

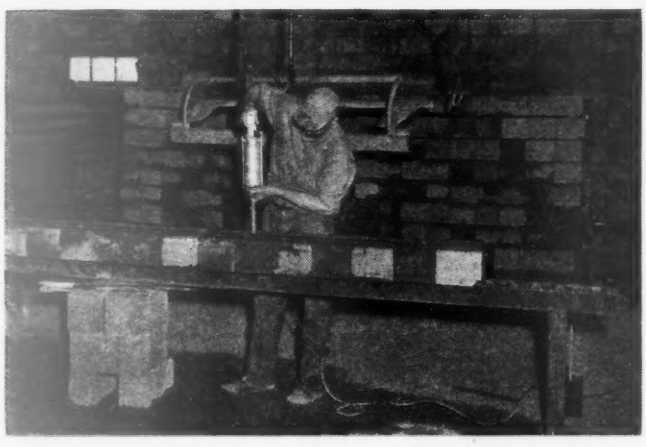
This mixer feeds a Besser Vibrapac block machine, which produces high quality blocks of various shapes and sizes. Up until this writing, the Besser has been used to produce 28 different types or sizes of block. To mention a few of the variations, the company stocks 12- by 8- by 16-, 8- by 8- by 16-, 8- by 8- by 8-, 6- by 8- by 16-, and 4- by 8- by 8-, 12-, and 16-in. block, and specials in these sizes. Cinder brick and chimney blocks are also made.

One of the first Kent Machine Co. "Lintelator" lintel machines to go into any operating plant has recently been installed at Moors Concrete Products Co. This is said to be the first mechanical lintel machine offered to concrete manufacturers, and should certainly step up production of this somewhat neglected product. The machine will permit the use of almost any aggregate, and is producing a satisfactory product with the cinders used at the Moors plant. The Lintelator makes 8- by 8-in., 7¾- by 7¾-in. or 6- by 6-in. lintels, in any length up to six feet. The lintels are produced in a four-sided mold, one side of which is the pallet, another the top member which exerts pressure by means of compressed air as the lintel is compacted by vibration. Reinforcing rods of ½-in. diameter are inserted in the lintel prior to vibration, and serve as strengthening members. When the molding operation is completed, the mold is rolled over on the pallet, the end members are swung out, and the lintel itself is transferred by air hoist to the curing rack. The machine is easily operated by one man. A separate batch mixer supplies the lintel machine with concrete, receiving its cinders from the same 60-cu.-yd. surge bin that feeds the block machine mixer.

A home-made lift truck is used to move racks of both lintels and blocks into the kilns, where these products undergo a standard curing cycle with steam and dry heat.

The Wm. Moors Co., are also suppliers of "Dox" floor and roof systems, and a portion of their plant is devoted to the manufacture of the beams used in this form of construction. Here, the individual blocks are placed in a jig, and a grout

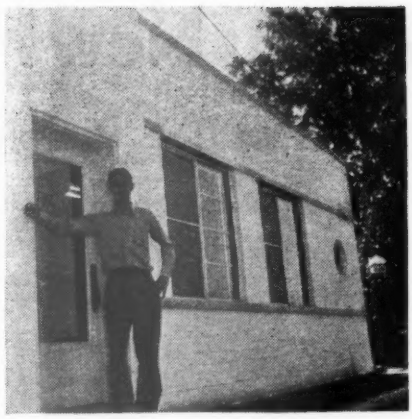
• Below: An operator uses an electric vibrator to settle the reinforcing rod into the grouted connecting groove in the beam.
• Right: The Besser vibrating block machine in the main plant.



troweled into the grooves on the ultimate bottom of the beam. Reinforcing rods are then introduced into this grouted channel, and vibrated under the surface with an electric vibrator. Excess grout is then troweled away, and the beams are stacked for curing.

Huron portland cement is used exclusively in the products plant, and is delivered direct from the Detroit distributing plant of the Huron Portland Cement Co. by truck, in bulk. Peerless waterproof cement paint is stocked and sold by the company, as it was found that many customers would make this additional purchase. A certain amount of good will is built up when the customer can make all purchases related to concrete products in a single trip, according to Hubert Moors, one of the partners.

The company office building is of the most modern cinder products construction, and effectively illustrates nearly all of the products of the company. The exterior is painted white, utilizing the cement paint, while the inside illustrates the use of various other colors, compared to the effect of the dark-colored block, which is equally as effective under other circumstances. The attractive effect of glass brick, used in combination with cinder block, is also to be noted in the building, as well as the fact that irregular windows are both practical and esthetically pleasing, when used with this type of construction. All in all, the office is an excellent living advertisement, and should definitely be a sales aid. Other products manufacturers might well follow the trend, which seems to be growing, of utilizing first-grade blocks in their own construction work, to point out what can be done with the product. Too many producers use only culls, irregular, and broken block for their plant construction work, and this cannot help but create a bad impression in the mind of the customer. It certainly is not representative of the best efforts of the industry.



• Hubert Moors, one of the partners, standing at the door of the new office building, which was constructed of nearly all of the various products of the company.

Because of the quantity of special blocks produced, the company is installing a new Fleming block machine which will be devoted exclusively to this work, leaving the standard block production to the Vibrapac.

With about half of the sales going to retail customers, and the remainder to commercial users—contractors, and large job orders—the Wm. Moors company has found it necessary to acquire ¾-ton trucks for local deliveries. Prices quoted include delivery to a reasonable distance, and start at 17 cents for a standard block—8- by 8- by 16-inch. Lintels (8- by 8-in.) sell for 65 cents a foot, while a 16- by 8- by 16-in. chimney block retails for 65 cents.

Hubert and William Moors operate this company as a partnership.

Granite-Faced Block Made And Tested by Scottish Firm

A development of considerable interest to the quarrying and concrete industries has been announced from Aberdeen, Scotland, where Robert Gibb and Sons, Excelsior Works, have perfected a new process by which concrete blocks may be faced with a ⅜-in. granite front.

The process has been evolved by Alexander Gibb and his staff after 18 months of experiment. The system permits the adhesion of granite facing to prefabricated concrete blocks, now being used extensively in housing programs throughout Scotland. Under crushing tests these processed blocks have withstood a pressure of 321 tons per square foot and where the concrete ultimately broke, the granite facing retained its adhesion to the concrete.

It is stressed that the process is still under preliminary examinations, but there is already a considerable volume of technical performance to justify the belief that this process offers a major outlet for granite and the more attractive construction of concrete-granite-faced buildings.

The expansion of this idea into other fields, including the monumental field, would undoubtedly mean a major revival of granite production in Scotland. The construction of houses in stone has declined immensely in recent years, and despite efforts on the part of stone quarriers to mechanize their industry, there is no real evidence that natural stones will replace bricks, concrete or alternative man-made materials. This decline has had severe repercussions on stone quarrying in Scotland and particularly on granite quarrying. A defect in the present development is that its economic adoption would involve major processing changes in the yards presently interested in stone. This could only be justified were a demand to be offered by municipalities for granite-faced houses.

California Pipe Concern Shares in $5,000,000 Award

The United Concrete Pipe Corporation of Baldwin Park, Calif., is one of a group of four companies awarded a $5,888,695 contract for the 2½-mile Delta-Mendota Intake Canal and the Tracy pumping plant and discharge lines. The award was made by M. W. Straus, commissioner of reclamation, who was authorized to sign the big contract.

Major items in the project include more than 45,000,000 cu. yds. of excavation, approximately 100,000 cu. yds. of compacted backfill, and nearly 71,000 cu. yds. of concrete. Concrete work will require 98,000 barrels of cement.

Ernest Rothfelder has begun operation of a concrete block plant in Emporia, Kan., in which he makes units 4- by 8- by 12-in. in size. The blocks are grooved for the insertion of reinforcing steel.

• Artist's drawing shows the Portland Cement Association's firesafe concrete masonry adaptation of the industry-engineered house. The use of modular-size materials coordinated with modular design eliminates expensive cutting and fitting on the job, thus reducing building costs. Modular concrete houses can be built to suit any family's preferences in size and architecural style.

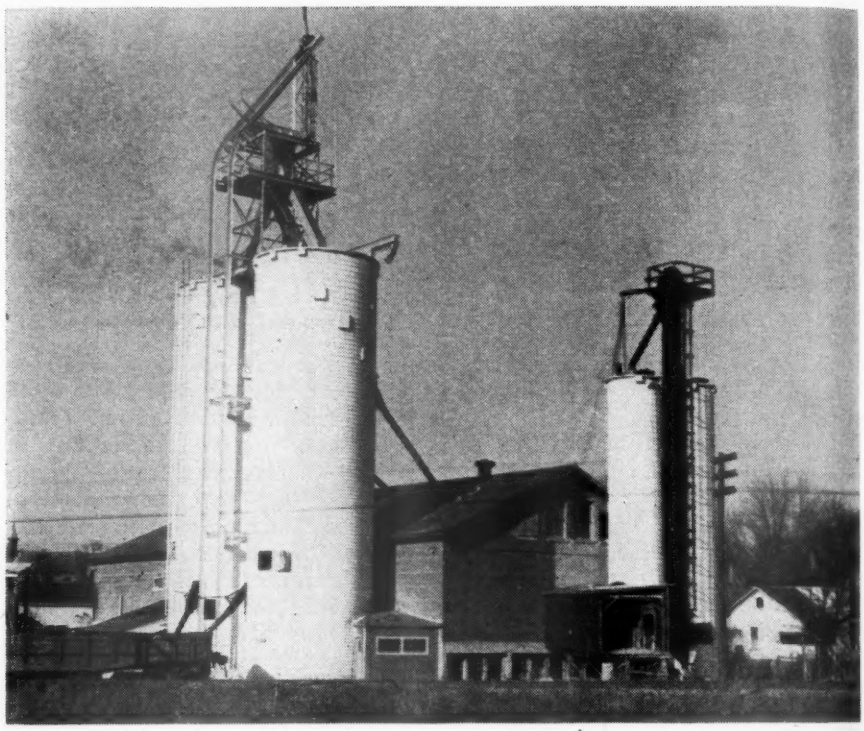
Neff & Fry Develops New High-Capacity Machine for Making Concrete Staves

another ON THE SPOT report

ONE of the country's important manufacturers of concrete staves for silo construction is the Neff & Fry Company of Camden, Ohio. Along with most other manufacturers in the field, this 35-year-old concern has experienced a vast increase in the demand for its product as a result of the growing use of concrete stave silos for storing a wide range of such industrial materials as cement, sand and gravel, lime, agricultural limestone, slag and coal.

By WILLIAM M. AVERY

In order to serve this expanding market adequately, the company has completely revamped its productive facilities and effected an increase of more than 100 percent in capacity. The unit chiefly responsible for this considerable increase in output is an altogether new molding machine on which 2,000 or more units can be turned out in an 8-hour day. Although much higher capacity than this has been achieved in the manufacture of square-end staves, the new Neff & Fry machine is believed to have set a new high mark in the production of diagonal-end units, or 6-sided staves as they are called by the trade. (This term has reference to the fact that each stave interlocks with and supports the 6 staves which surround it.) On the face of it the diagonally-pointed unit presents a considerably more difficult problem in connection with mass production than the square-end type, and the accomplishment of an output rate of 250 staves per hour on the Neff & Fry machine seems to us a correspondingly outstanding achievement.

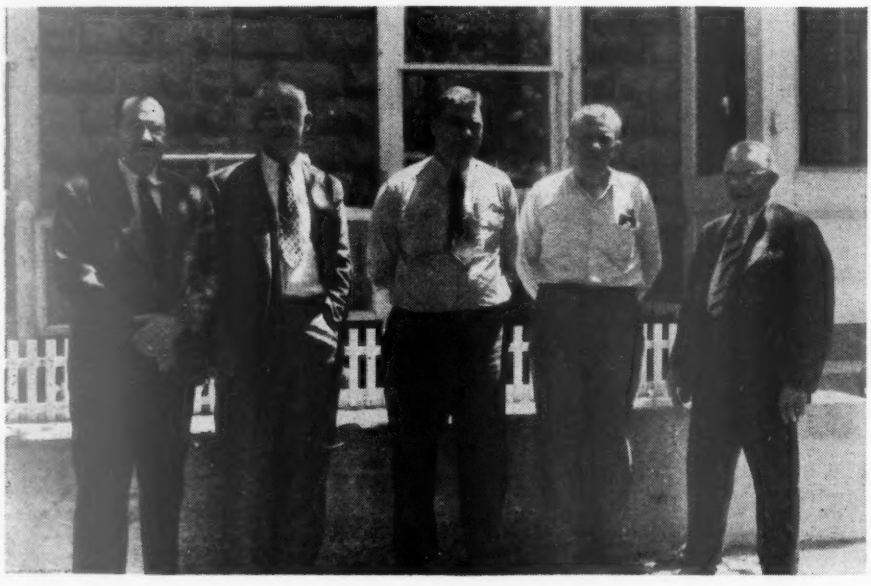


• A general view of Neff & Fry's concrete stave plant at Camden, Ohio. The two aggregate bins at the left are served by a skip hoist, the two cement bins at the right by a conventional undertrack screw-and-bucket elevator arrangement.

The new machine, which was developed entirely by the company's own personnel, employs both hydraulic pressure and vibration. It produces one unit in each cycle of operation, and normally the machine may be operated at the rate of 4 cycles per minute. The 10- by 30- by 2½-inch staves are formed face down on ¼-inch steel pallets which measure 14 by 40 inches. The 2-piece mold is opened and closed by two 7½-inch-diameter, double-acting hydraulic cylinders which are capable of exerting pressures up to 2,000 p.s.i. Both vibration and pressure are applied to the upper face of the unit by means of two Syntron vibrators and a third hydraulic cylinder operating in conjunction with the leveling head. Pallets are fed into the rear of the machine on a chain conveyor, and are delivered to the off-bearer at the front by the same means. A conventional draw box cuts off and trowels the staves. One of the features claimed for the machine is the remarkably close tolerance in all the dimensions of the units molded—a characteristic which pays off handsomely when the staves are put together in a silo.

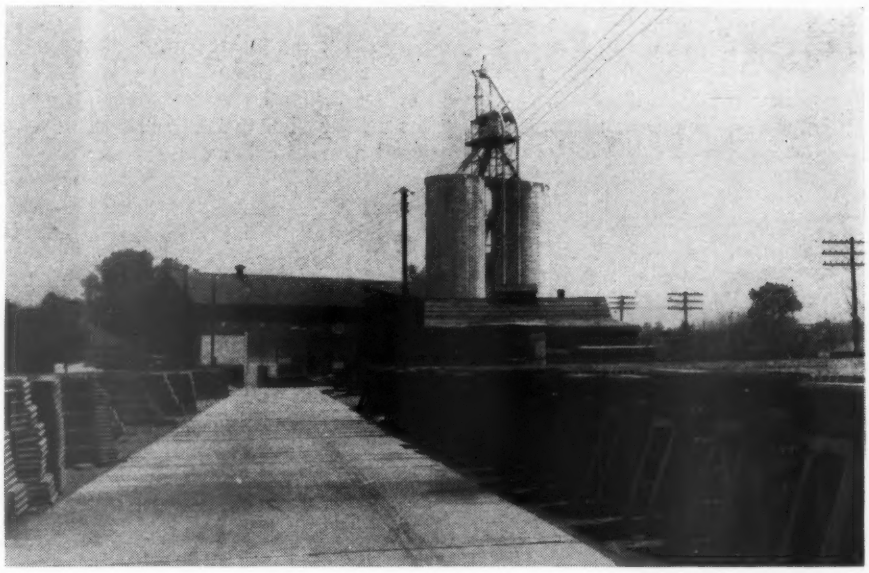
New storage, batching and mix-

• The company's top men shown here are, left to right: Lee Lonacher, sales manager; C. Rodney Neff, treasurer; R. E. Beasley, chief engineer; J. V. Braun, plant superintendent; and D. H. Herbster, president.



ing facilities have been installed to operate in conjunction with the new molding machine. Two 8-foot-diameter by 45-foot-high concrete stave silos provide storage space for 3 carloads of bulk cement. They are loaded by means of a conventional undertrack screw conveyor and bucket elevator arrangement, and the same elevator is used for feeding the batching hopper. Two bins are used for cement in order to maintain a constant turnover of material, one bin being completely emptied before the other is drawn from. The spouts which direct the flow of cement into the bins and to the batcher have been porcelain lined to assure full flow at all times.

Sand and gravel are stored in two concrete stave bins which measure 20 feet in diameter by 67 feet 6 inches high. These bins are loaded by means of a 30-cu.-ft. vertical skip hoist which receives the materials from a ground-level pit. Each has a 60-ton capacity live storage floor set at an incline of 45 degrees.

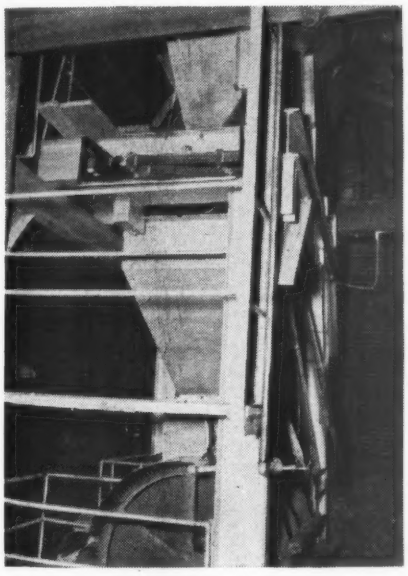


• This view of the plant from the storage yard shows the wide paved runway and gives some impression of the large stockpile of finished staves which the company maintains.

Sand and gravel may flow directly by gravity from these sections to the batching hoppers. When the live storage sections are filled to capacity, the materials spill over into the larger storage sections below, and from there they may be reclaimed by spouting them back into the skip hoist.

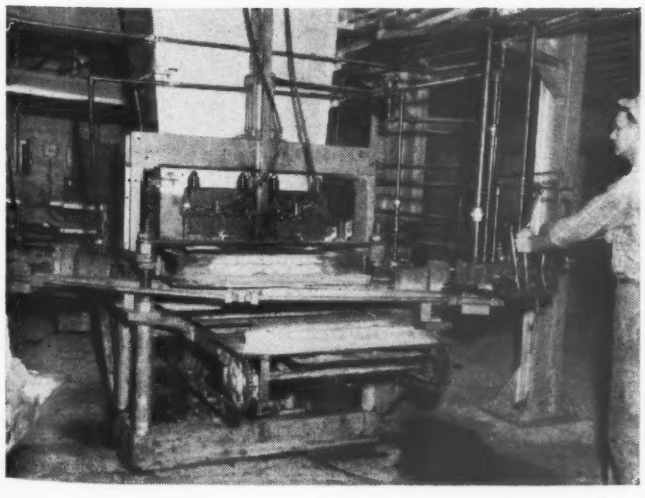
Cement, gravel and No. 9 pebbles are batched by weight in a Construction Machinery 1-cu.-yd. batcher, and the amount of water used is measured by a Neptune meter. In cold weather the mixing water is heated with a Bryan automatic oil-fired boiler. Batching and mixing are both done on the second floor of the plant building directly above the molding machine, the batcher being supported by a steel framework which straddles the 28-cu.-ft. Stearns mixer.

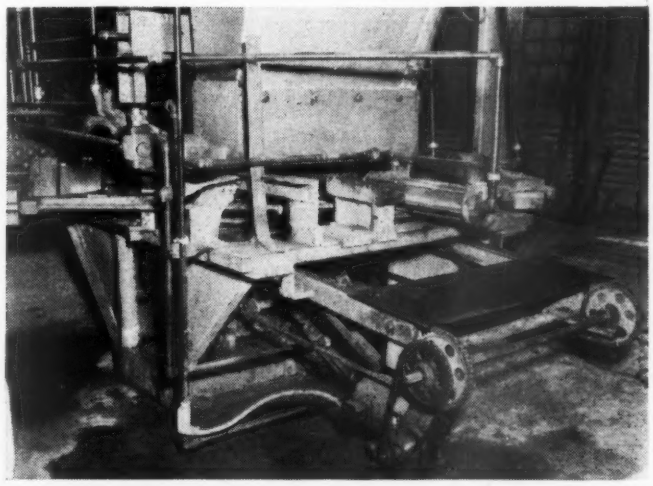
This company takes a great deal of pride in the quality of its concrete, and there is considerable laboratory data, collected over a period of many years, to show that steady gains have been made in compressive strength and other important characteristics. Materials are selected with the utmost care, and batch proportions are given the closest attention and carefully correlated with test data on the concrete itself. In 1925 the average 28-day compressive strength of the company's staves was 4,860 p.s.i., by 1930 the figure was up to 5,230 pounds, and in another five years it had reached 5,550 pounds. In 1940 the average stood at 5,640 pounds, and currently tests are running well over 6,000 p.s.i. All contracts now carry a 5,000 p.s.i. guarantee, and the company claims that its staves



• Left: The 28-cu.-ft. mixer and the weigh batcher are located on the second floor of the plant building, directly over the molding machine.

• Front view of the new molding machine. The two 7½-in. hydraulic cylinders which open and close the mold are visible at the sides.





• This rear view shows the chain conveyor which feeds the empty pallets into the machine. The pallets measure 14 by 30 inches and are placed on the conveyor manually.

are the densest and strongest being manufactured today. Tests are made by the Pittsburgh Testing Laboratory every 30 days.

The present high average strength

• Racks are handled on the paved runway of the storage yard with this gasoline-powered lift truck.

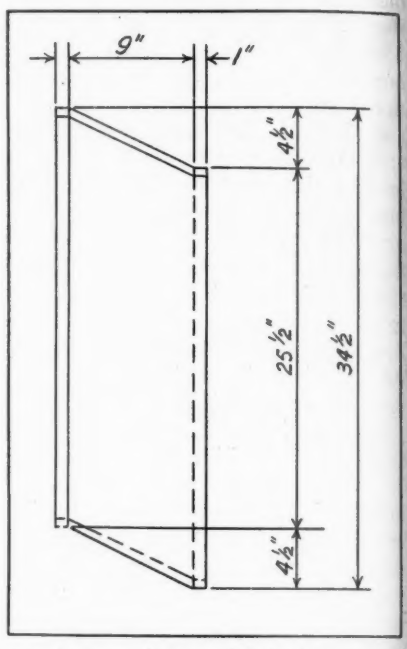
is at least in part attributable to the new molding machine, which is capable of operating with a much wetter mix than anyone had formerly thought it possible to use in the manufacture of silo staves. Another important contributing factor is the generous length of time allowed for mixing—never less than 10 minutes, and often either 11 or 12 minutes. The standard mix currently in use consists of 300 pounds of ⅜-inch gravel, 1,700 pounds of sand, 5 sacks of cement and 12 gallons of water.

Normally the staves are water cured in the storage yard after overnight storage in the plant building. Wooden racks, each holding 25 units, are handled with a Truck-Man lift-truck inside the building and with an Erickson lift-truck on the paved storage yard. For winter operations there is one large room in the main plant building in which the units may be steam cured. Since there is room in the yard for storing up to 200,000 units, the company is able to adhere rigidly to a policy of never shipping staves that are less than 28 days old. The loading of trucks and railway cars is facilitated by the use of belt conveyors and gravity roller conveyors.

Neff & Fry's considerable investment in time and capital to develop and install new production machinery has had an important effect upon labor efficiency. The hydraulic molding machine formerly in use made only 900 units in an 8-hour day with a 4-man crew. The new machine with the same crew makes 2,000 or more units in an 8-hour day. To maintain this high rate of production only standard staves are made on the new machine. So-called "starter" units are still molded on the low-capacity machine.

Like most manufacturers of concrete staves, The Neff & Fry Company does all its own erection work. Its own engineers survey all proposed sites, and make all foundation and other related design drawings. Although at one time the company manufactured square-end staves, extensive field experience indicated that faster erection was possible with diagonal-end units.

Organized in 1916 by Charles R. Neff and M. B. Fry, the company's early operations were concentrated in the farm silo field and in the manufacture of slab vaults. In recent years vigorous promotion of concrete stave silos for industrial storage problems has relegated farm sales to second place in the company's operations. Although farm applications still account for an important share of total sales, more silos are sold today for storing sand and gravel, cement, coal and similar materials. Door frames, stave chutes and other farm silo accessories are also manufactured. At another plant in Camden the company makes, under its own patent, a concrete burial vault known as the Surface Sepulcher. During the war Neff & Fry made 80,000 concrete bombs for use in aerial target practice, and was cited by the War Department for outstanding service.



• A diagram showing detail of stave construction. Note the diagonal-end design for which Neff and Fry developed its own molding machine.

With its new production facilities the company plans to turn out staves on a year-around basis, utilizing the winter months to accumulate a stockpile from which to draw during the erection season. A backlog of demand which built up during the war (when steel hoops were unobtainable) still has the entire organization jumping to catch up. This, in combination with expanding new markets, promises full capacity operations for as far into the future as anyone can see at present.

Illinois Farms Provide Market For Rib-Stone Concrete Units

A salesman's ability to oversell his product has resulted in the formation of a new industry in Cissna Park, Ill., where S. J. Hoffman now manufactures concrete silo staves known as "Rib-Stone." Two years ago Mr. Hoffman decided to leave the firm for which he was selling and go into business for himself. He and his two sons, Kenneth and Wayne, and his son-in-law, William C. Reed, have organized the S. J. Hoffman & Sons Co. for the production of individually-cast concrete rib panels or staves for silos.

The units are of two sizes, 24 and 30 inches in width. They are laid alternately in order to stagger the joints. Each stave has an interlocking joint. Galvanized steel bands hold the ribs together. In the two years since production began the firm has made and sold staves for more than 200 silos.

Earl J. Sherwood, 49, president of the Great Lakes Concrete Pipe Company of Buffalo, died at his home recently after a brief illness. He became president of the firm in July, 1929, after serving as Buffalo district manager of the American Construction Company.

Production of bonding cement is now in progress at the new plant of the NivLoc Manufacturing Company at 56th Street, Indianapolis, Ind. The product is used for patching and waterproofing masonry. L. L. Castetter, owner, states that the plant, with its new equipment, will turn out up to a carload of cement per day.

Pipe Dreams Issue Regularly From Well Known Pipe Company

Pipe Dreams is the name of a jaunty little magazine published by the Universal Concrete Pipe Company of Columbus, O. Humor, pertinent information about the industry, stories and illustrations of Universal products in the process of installation, and attractive drawings enliven the appealing little publication.

Universal has plants in 16 cities throughout the United States. Four concrete pipe companies are associated with the firm as subsidiaries.

William E. McCain, 65, founder and president of the Erie Concrete & Steel Supply Company, died on August 5 in Erie, Pa.